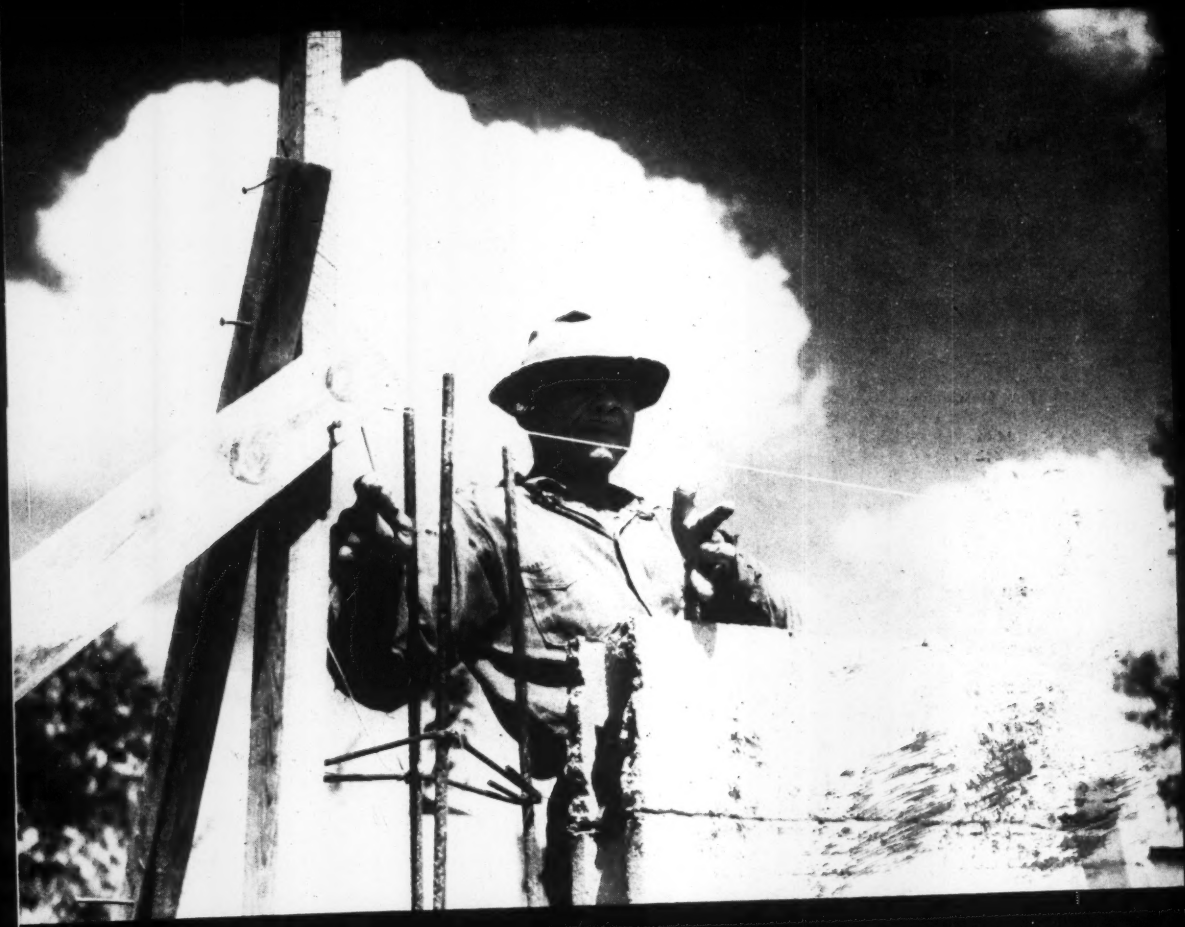
ENGINEERING NEWS-RECORD



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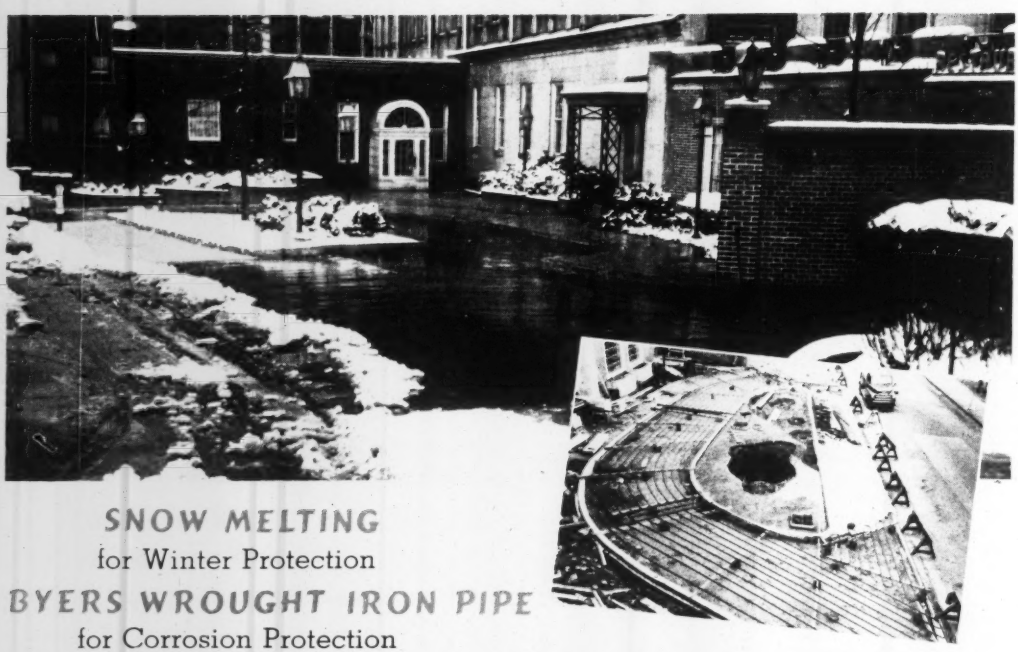

SNOW MELTING
for Winter Protection

BYERS WROUGHT IRON PIPE
for Corrosion Protection

As a further expansion of service, the Stratfield Hotel, Bridgeport, Connecticut, recently installed a snow melting system so its guests can enjoy the convenience and safety of "summer sidewalks" and clean, safe driveways in the midst of winter snows.

One of the largest snow removal systems in Connecticut, this installation required about six tons of Byers Wrought Iron pipe for the heating coils. In winter, hot water is circulated through these coils, melting snow as it falls and keeping the main drive, service entrance, and sidewalks continuously clear. An anti-freeze solution is added to the water to prevent freezing when weather conditions do not require the system to function. This system will eliminate snow-shoveling crews and expenditures for cinders or other materials designed to keep access areas hazard-free.

The snow melting installation was part of an extensive alteration-rehabilitation project of the hotel's main restaurant and kitchen which was handled by Westcott and Mapes, Inc., Architects and Engineers. The system was installed by Kecko and Son, Heating Contractor.

Snow melting systems, utilizing Byers Wrought Iron pipe, are currently serving in walkways, loading platforms, garage driveways, service station aprons, and in roadways serving both homes and industrial plants. This ever-increasing acceptance is the best possible evidence of snow melting's remarkable performance record.

Wrought Iron is ideally suited for this service because of its combination of essential qualities. Its corrosion resistance has been repeatedly proven over periods of many years in identical service conditions. It is easily formed and welded, speeding installation. Its heat emission is high. It expands and contracts at virtually identical rates with concrete. And it has ample mechanical strength to withstand damage during installation.

If you would like additional information on this important development, write for our Case History No. 5 on Snow Melting Systems.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, N.Y.

WHY WROUGHT IRON LASTS

This notch-fracture test specimen illustrates the unusual fibrous structure of wrought iron—which is responsible for the unusual corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

BYERS

CORROSION COSTS YOU MORE THAN WROUGHT IRON

WROUGHT IRON

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at hard labor on the ROCK PILE

At Clark Hill Dam—$60,000,000 triple-purpose dam now under construction on the Savannah River—all aggregate rides from quarry to dam site on a 16-belt conveyor system. Here, as in outstanding construction projects the country over, conveyor belts specified by the G. T. M. —Goodyear Technical Man—are giving long, low-cost service.

G.T.M.-SPECIFIED GOODYEAR STYLE B CONVEYOR runs from primary stock pile to crusher and screening plant.

FROM CRUSHER TO STOCK PILES, sized aggregate is stock-piled by shorter conveyors belted according to the G.T.M.'s specifications.

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UPGRADE from stock piles to mix plant, all aggregate rides this Goodyear Style B conveyor.

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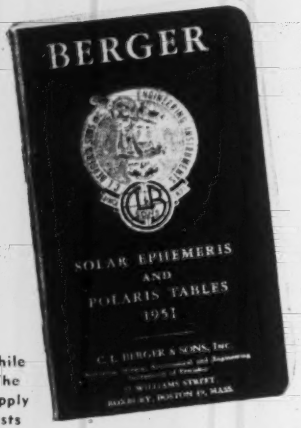

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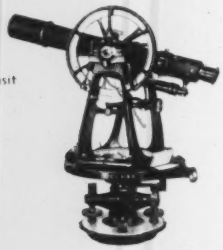

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ENGINEERING NEWS-RECORD

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Volume 146 — FEBRUARY 15, 1951 — No. 7

WALDO G. BOWMAN
Editor

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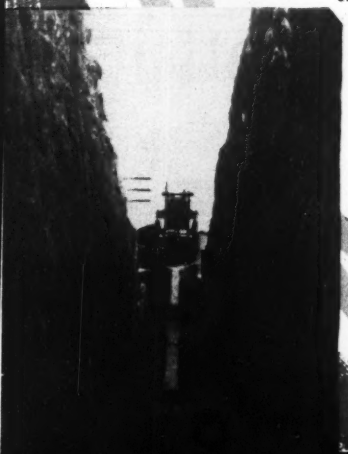

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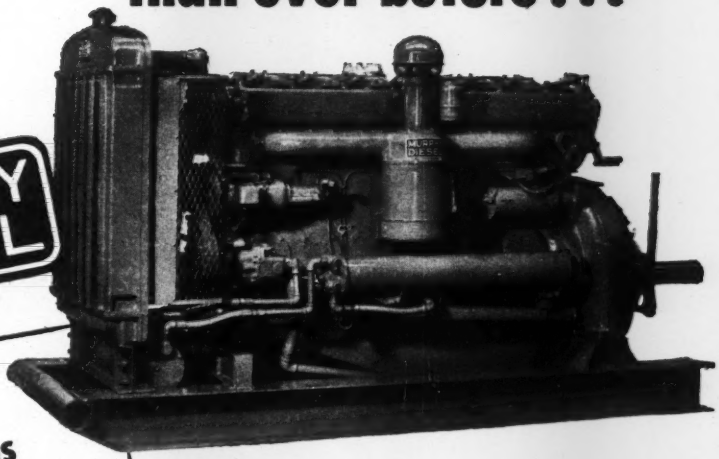

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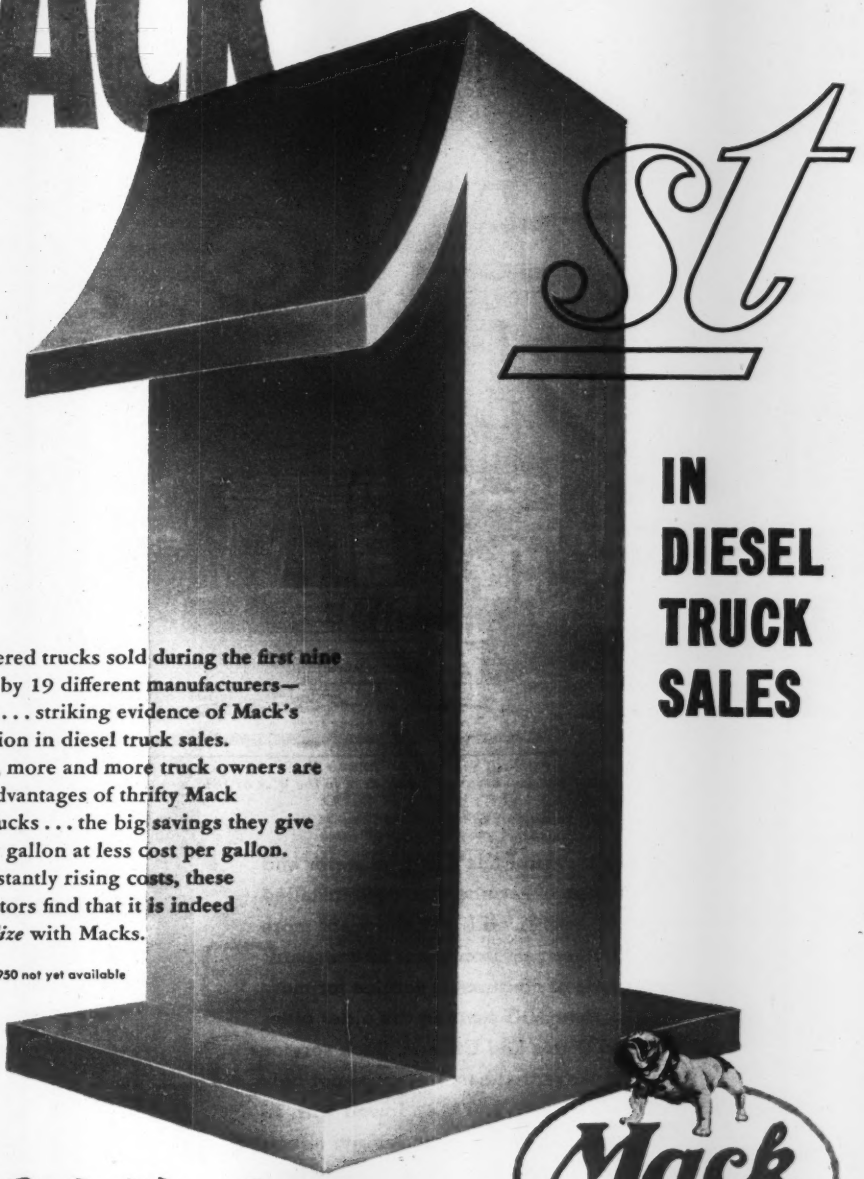

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IN DIESEL TRUCK SALES

Of all diesel-powered trucks sold during the first nine months of 1950* by 19 different manufacturers—41% were Macks . . . striking evidence of Mack's top-ranking position in diesel truck sales.

The country over, more and more truck owners are discovering the advantages of thrifty Mack diesel-powered trucks . . . the big savings they give in more miles per gallon at less cost per gallon.

In the face of constantly rising costs, these progressive operators find that it is indeed *profit-wise to dieselize* with Macks.

*Final figures for 1950 not yet available

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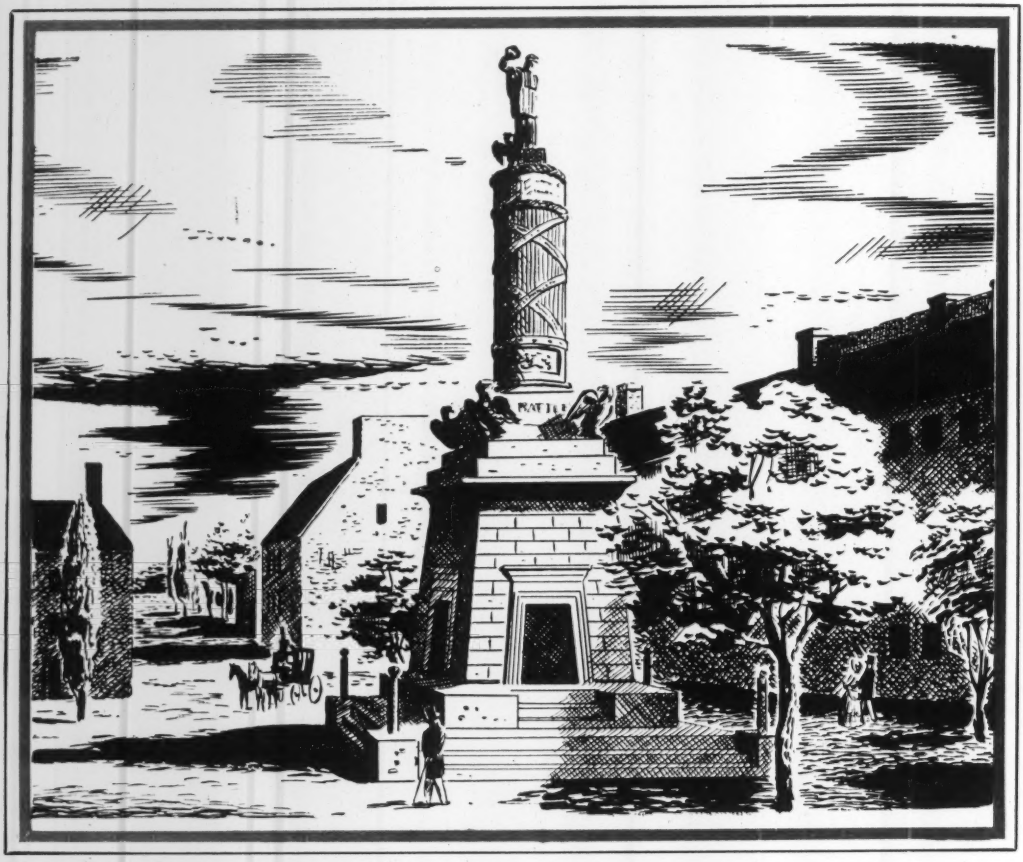

Baltimore's Battle Monument to her heroic dead in the War of 1812, as it looked 100 years ago.

Baltimore, Maryland has cast iron water and gas mains in service that were installed more than a century ago. In addition, there are more than 28 other cast iron water or gas mains with known records of continuous service for more than 100 years in the older cities of the United States and Canada. Such service records prove that cast iron pipe not only resists corrosion effectively, but is endowed with all the strength factors that pipe laid under city streets must have to meet the stresses imposed by modern conditions of traffic and underground services.

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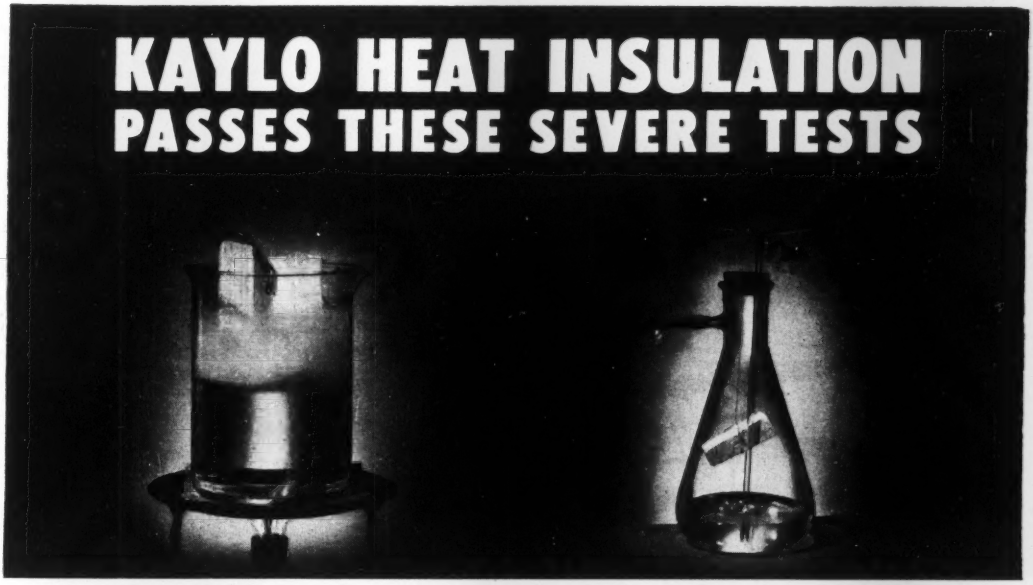

BOILING TEST: Samples of Kaylo Heat Insulation have been boiled continuously for 24 hours and longer. None disintegrated or showed any loss of insulating efficiency after drying.

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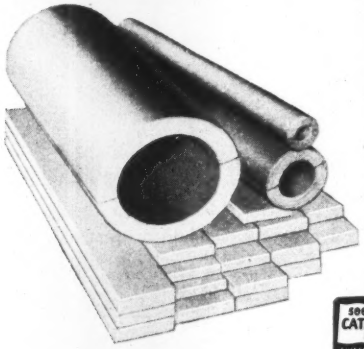
One Material Insulates Efficiently up to 1200°F.



Kaylo Heat Insulation is made of hydrous calcium silicate (not glass), a remarkable material with high insulating efficiency up to 1200°F. This new type of inorganic insulating material retains its stability in long service under severe conditions. Exceptional strength and lighter weight make it easier to handle and apply.

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NEWS BRIEFS

Heavy equipment shoots rapids—Drilling has been started by the Bureau of Reclamation at the site of the proposed Hell's Canyon Dam in the Snake River on the Oregon-Idaho border. Drilling equipment was floated to the site through the tortuous Snake River rapids, in shooting of which the steel barge was hung up temporarily by hitting rocks, but the run was completed safely. Earlier, engineers had estimated it would require up to a month to get the equipment down into the canyon and to the dam site by use of shore winches and barge.

Landslide information—The Royal Swedish Geotechnical Institute is investigating the great landslide at Surte, north of Gothenburg, Sweden. (ENR Dec. 21, '50, p. 31). A comprehensive report in English will be published in the spring.

Vermiculate find—Canada's first commercially-usable deposit of vermiculate has been discovered at Stanleyville, only 60 miles southeast of Ottawa, according to the Canadian Department of Mines and Technical Surveys. The deposit is of high quality and will be developed by the Siscoe Mining Co. Canada annually imports about a quarter of a million dollars worth of this valuable mineral, much used in its processed form for insulation and lightweight aggregate. As imports come from South Africa and the United States, the new local deposit has real economic value in the dominion.

Garment district garage—The first large scale privately-sponsored garage building on Manhattan's West Side since the Radio City parking center was built is now under way in the heart of the congested garment district where the 515 Seventh Avenue Corporation, headed by Lawrence D. Mayer, David A. Harris and Irving D. Karpas, has started excavation. One of the major contributions to the solution of the traffic difficulties in the area, the 3-story steel-frame ramp structure with parking space for 400 automobiles will be erected on the southeast corner of Seventh Avenue and 38th Street, extending 100 ft south on the avenue and 200 ft east on the street. Demolition on the site is well advanced and foundation work has been started by Psaty and Fuhrman, the general contractors. Plans are by

(*Continued on page 13*)

WHAT'S BEHIND THE EUCLID NAME ?

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IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

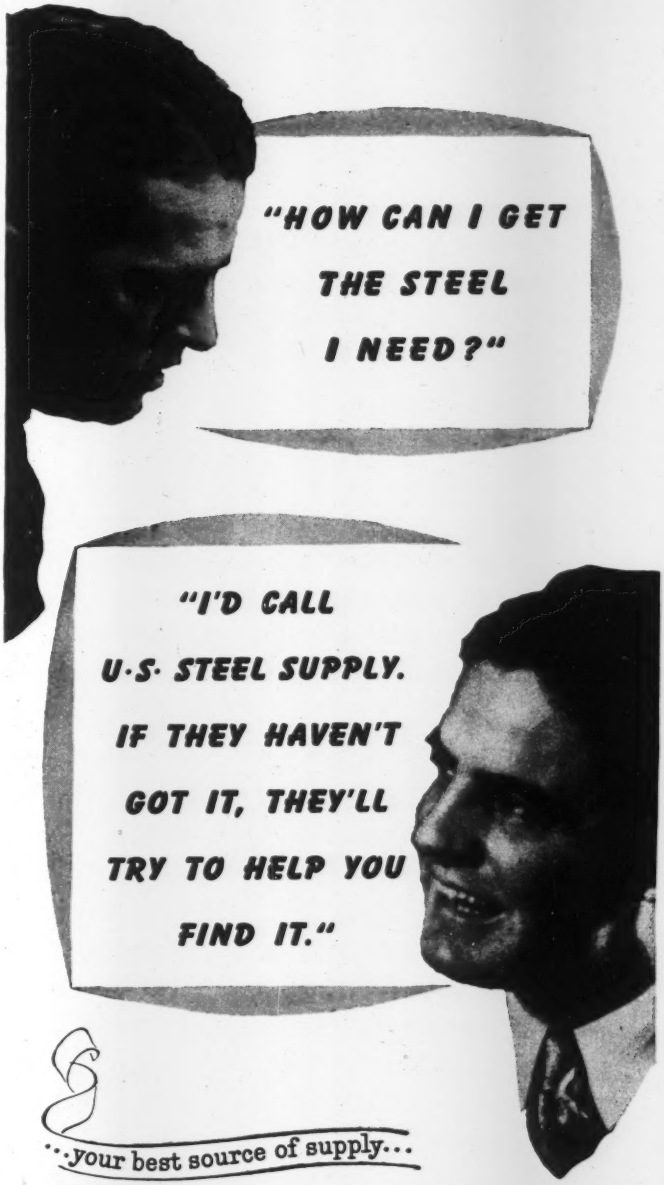
Kelly & Gruzen and Wm. F. Jenter, architects. Provision has been made to convert the structure to office or loft use in necessity. Mechanical ventilation in the garage will eliminate exhaust fumes.

To minimize cutbacks—The National Retail Lumber Dealers Association will appoint a committee to confer with building industry and government officials on ways to conserve building materials containing strategic metals as a means of minimizing the cut back in civilian construction during the rearmament program. Clyde A. Fulton, president of the association, says: "Where the acceptability of substitute materials can be demonstrated, there should be little difficulty in persuading local governments to amend building codes to permit their use."

State reclamation commission suggested—The Western Washington Reclamation Institute, as its 11th annual meeting in Bellingham, Wash., recommended that the present Columbia Basin Commission, set up by the stat legislature in 1943 for the federal government's Columbia Basin irrigation project in Eastern Washington, be changed to include in its functions all of the state's irrigation districts. The name would be changed also to "Washington State Reclamation Commission."

Title clarification needed—About 50 years ago a real estate supersalesman acquired considerable land around what is now South 37th Street in Louisville, Ky. The land wasn't much good—too swampy—but the realtor advertised 25-ft lots at "75 cents down and 75 cents a week". Nobody built there and many buyers, discouraged, forgot about it or lost their deeds. All of the lots have been taken over by the tax assessor. Now the city wants to build a school there but before the Board of Education can get a clear title probably it will have to start condemnation proceedings.

No dumping!—James B. McTamany, road engineer of Jefferson County, Ky., charges that it is now costing close to $2,000 a month, money that should go into road repairs and construction, to pick up garbage dumped along public highways and roadsides by suburban dwellers in sections where there is no garbage collection. Recently he has instructed workers when cleaning up such messes to look for envelopes, shipping tags, or other evidence of the name of the person dumping such packages. He has already accumulated a few names and is planning on having the County Attorney issue an official warning to such transgressors.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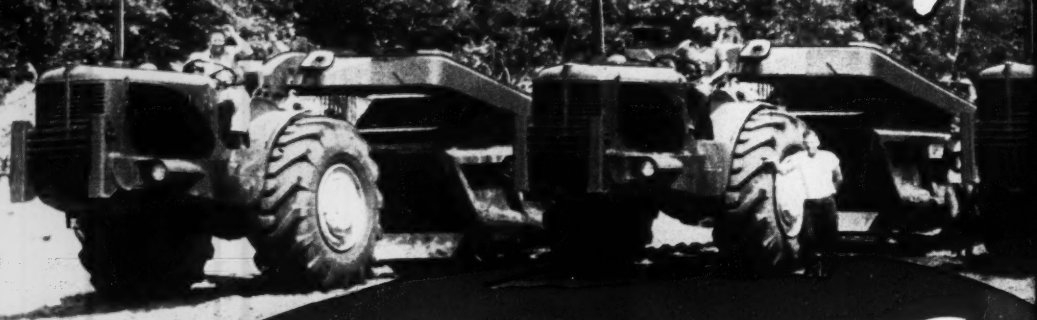
On the New Jersey



Heiliners keep schedules highballing . .

Shovel-loading a Heiliner tandem-dump unit on the New Jersey Turnpike. Capacity — 20 cu. yds. High clearance, heavy torque-action, and easy steering keep units down.

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Fleet of Heiliner 2C-800 Scrapers on the New Jersey Turnpike. Capacity of each — 18 cu. yds.

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2C-800 Heiliners are available with either an 18-cu. yd. scraper or a 20-cu. yd. bottom-dump wagon (both are interchangeable). Heiliner scrapers and bottom-dump wagons are both used on the New Jersey Turnpike to meet schedules and avoid penalties. Have your Heil road-machinery distributor show you why Heiliners move more dirt faster, at less cost!

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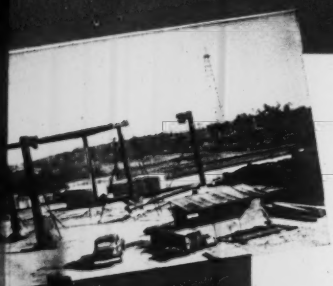
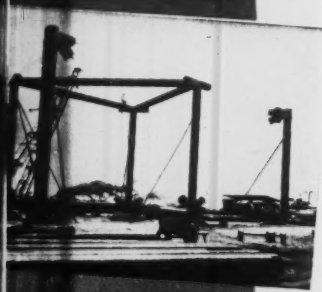
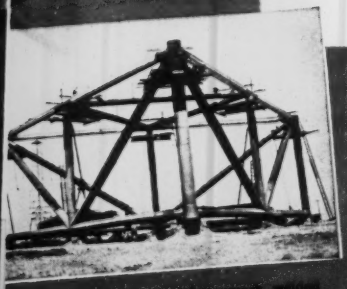


1. Construction of pipe-frame float 32 miles to site, on Lake Maracaibo.



2. Closer view of the starting framework, showing 22" diameter steel pipe being used.

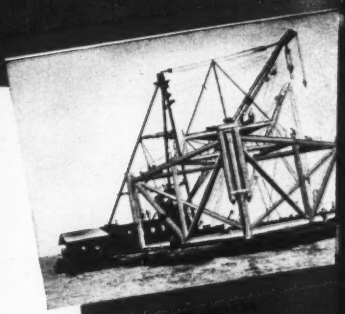


3. Completed framework, welded and watertight except for the corner verticals, which will accommodate anchor spuds.

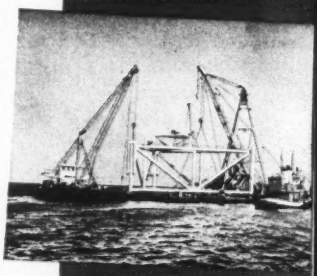
The Problem: 250-foot Gow soil borings, accurately spotted five to ten miles offshore in the deep waters of Lake Maracaibo, Venezuela. The Project: pile foundations for future oil-well derricks. Special Hazard: 70-mile-an-hour "chubascos," violent squalls that would wreck temporary platforms.

The Solution: Raymond engineers designed a triangular *floating* platform of 22" steel pipe, welded and watertight. The three corner members were left open for 120-foot-long anchor spuds. Assembled on shore from steelwork fabricated in New York, the 60-ton float was skidded onto two barges and towed 32 miles to the first boring location where floating derricks launched it. Spuds and deck equipment were placed later, including winch-controlled anchors at each corner to help in spotting the float and holding it steady during boring operations.

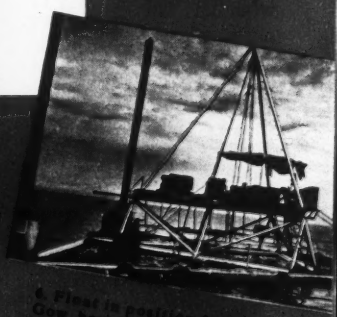
The Moral: When the problem is tough, the answer must still be *right*. That's when it pays to have a resourceful, experienced organization on the job . . . like Raymond!



4. Launching the 60-ton float. Note work platform, spotted 10 feet above framework.



5. Leaving the 60-ton float. Note work platform, spotted 10 feet above framework.



6. Float in position for Gow boring operations, anchored by the 120' spuds and cables at each corner.

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THE CONSTRUCTION WEEK

NEW CONTROLS HEAD—Rufe B. Newman, Jr., last week gave up his consulting engineering business in Florida, at the call of Frank R. Creedon, to take over as acting director of NPA's construction control division—the job filled temporarily by Ralph Britton since Jim Follin resigned.

CMP ON SCHEDULE—10,000 manufacturers of building materials and construction machinery soon will receive application forms which require information showing what they need in supplies for their orders on hand. Within 75 days thereafter, Controlled Materials Plan agency will tell each maker how much material he will get for the third quarter starting July 1.

DESIGN SIMPLIFICATION TO SAVE METAL—NPA is expected to order design changes first in builders' hardware, then for other lines. For example, it would require brass plate on steel, in place of solid copper or brass for products exposed to weather.

RAIL STRIKE CUTS STEEL PRODUCTION—Best estimates have it that some 300,000 tons of raw steel production were lost during the railroad switchmen's strike. Final total may be higher. And the mills cannot make up the lost production. The industry generally is producing at capacity.

CIVIL DEFENSE DECISION—Business men are marking time on starting new commercial-industrial construction while awaiting top decision on dual-purpose buildings designed to serve as mass shelters during bomb attacks. They want answers to three questions: (1) DO orders for materials needed; (2) five-year tax amortization for the added cost of "protective" construction; (3) federal-state sharing of added cost on a 50-50 basis, as laid down in the Civil Defense Act.

TWENTY MILES ENOUGH—Closed hearings last week before the House Public Works special subcommittee produced this advice by the Atomic Energy Commission and the Air Force: that dispersal of federal buildings at least 20 miles outside the District of Columbia would be sufficient to prevent total disruption of government functions in event of A-bomb attack.

HIGHWAY JAM SIMULATES DEFENSE REALISM—Defense officials of New York City and adjacent Westchester County shuddered last week as the railroad strike caused thousands of commuters to use their cars, bringing traffic speed to a crawl as the swollen tide inched along. They decided that—should evacuation of the metropolitan area be required—motorists must be kept off the roads, if mass catastrophe is to be avoided.

PLACE FOR PRIVATE FIRMS—Consulting engineers should get some business out of the recent allocation of $800,000 in Point Four funds. The State Department specifically stated that Brazil's program will be based upon cooperation between government and private interests, with greater employment of the latter, both foreign and domestic.

BOND ISSUE FOR PUBLIC WORKS PROJECT—Considerable interest is being shown in California to a proposed $1 billion bond issue designed to promote worthwhile local public works projects. The state would buy the local bonds and offer them to private investors, supplying only its credit.

REGISTRATION FOR SURVEYORS—The Maine Legislature will be asked at the present session to pass a bill requiring registration of all land surveyors. Like all other states, Maine already registers engineers.

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EASIER FINANCING LOOMS FOR PUBLIC CONSTRUCTION

A rising market for municipal bonds is making public construction easier to finance—and the trend may last for many years.

Mobilization is responsible. Huge defense expenditures force federal taxes to higher and higher levels—which helps public construction by giving demand for municipal bonds a big boost.

The reason, of course, is that municipal bonds are free of federal taxation. Investors are more eager to buy municipals when taxes take a bigger slice of earnings from other securities.

For construction, the trend means more public work in the long run. The defense program is expected to keep federal tax rates high for years and years. As long as federal taxes help maintain demand for tax-free securities, state and local governments can pay lower rates of interest on their bonds, thus finance more programs of construction.

MORE TAXES—MORE DEMAND FOR MUNICIPALS—Size of the federal budget—$71 billion for fiscal 1952—makes experts expect the trend toward municipals to continue. To cover the expected deficit, President Truman has asked new taxes of over $16 billion. Washington observers don't expect Congress to come through with all the President wants, but new taxes are bound to be a lot higher.

If the President's first tax proposal, to add $10 billion to revenue, is enacted, municipals will be much more attractive to investors.

A man paying taxes on $10,000—at present rates—gets the same return from a 4.55% corporate bond as from a 2% tax-free municipal. Under the new proposal the corporate would have to pay 5% to equal the 2% municipal. For a man in the $100,000 class, the corporate bond would have to yield an impossible 18.18% under the old law, 28.57% under the proposals.

The accompanying table shows how much corporate or taxable government bonds have to yield to equal the after-tax return of a 1.70% municipal bond—under the present law and the proposed one—for persons in different income brackets.

	% Equivalent to 1.70% tax exempt	
Taxable Income	Present Tax Law	Proposed Tax Law
$10,000	2.74%	2.93
20,000	3.86	4.25
30,000	4.47	5.00
40,000	5.48	6.30
50,000	6.80	8.09
75,000	8.94	11.33
100,000	15.45	24.28
200,000	18.88	34.00

New taxes have the same effect for corporations that hold bonds. A corporation paying taxes on more than $25,000 gets no more from a 3.21% taxable bond than from a 1.70% municipal. The new proposals would raise the figure to 3.78%—and the excess profits tax boosts it to 7.39% for earnings in the "excess" range.

New tax laws may not take the exact form assumed here: a four percentage point rise in every bracket with corporate rates going to 55%.

But taxes are bound to go higher—and add strength to the market for municipal bonds.

MUNICIPAL SALES HIGH—The lure of a tax advantage helped sell a record amount of municipal bonds last year, when an estimated $3,500,000,000 in new bonds were taken. New issues this year are not expected to be so large, but it has been estimated that their value will reach $3.35 billion. By 1956, the value of municipals outstanding may climb to $34 billion.

Not all these bonds are for construction, of course. Veteran's benefit bonds, which may come to $500 million this year, totaled $2.5 billion since the war.

But a significant part of the total goes into new buildings, waterworks, sewerage, drainage, bridges and roads. And the apparent willingness of the market to absorb new issues promises well for the financing of future state and local construction.

The tax exemption makes municipal bond sales possible. Without it the bonds would have to carry much higher interest rates—higher than most state and local bodies could afford.

The tax exemption is again under attack. Its opponents say it is inequitable; it discriminates against other kinds of bonds, and allows investors to escape their fair share of the federal tax burden.

But removal of the tax exemption might actually create more problems than it would solve. States would be unable to sell bonds at low interest rates, so they would pay for more construction out of taxes. And many municipalities would find it almost impossible to pay higher rates of interest—they would turn to the states for more money, add to the burden of taxation.

All of this might well result in greater federal spending, too—federal aid might become necessary for all state and local public construction.

In view of the strong support for tax exemption—and since it probably would take a Constitutional amendment to repeal it—it is likely that municipal bonds will continue to enjoy their favorable tax position for a good many years.

Many public construction projects are essential, will continue in spite of shortages of materials. The big demand for tax-free municipal bonds should assure easier financing for the public projects—as long as federal tax rates stay high.

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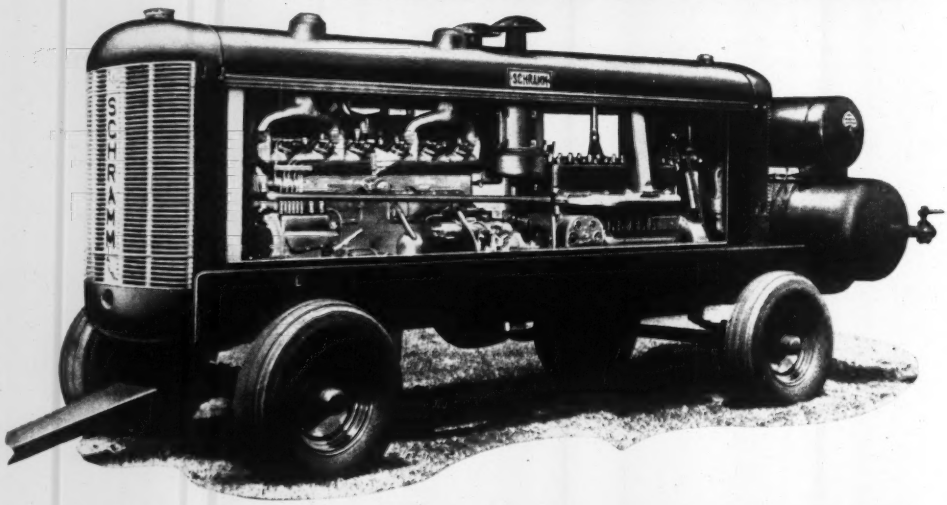

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The bridge failure at Three Rivers

THE DUPLESSIS BRIDGE at Three Rivers, Quebec, was a modern bridge by all recognized standards. Yet four of the eight spans across the west channel of the St. Maurice River collapsed early in the morning of Jan. 31.

Completed in 1947, this west channel crossing consisted of all-welded steel girders continuous over 8 spans and supporting a reinforced concrete deck. Span lengths were 180 ft, except at the abutments, where they were 150 ft. Girder bearings were fixed on the center pier and on rollers at other points of support. Expansion joints in the deck were at the abutments.

Any conclusions as to the actual cause of failure advanced at this time must remain matters of conjecture so long as most of the evidence lies in the ice-covered river. Nevertheless, such evidence as is available points to brittle steel as at least an important contributing factor—if not the prime cause of the collapse (ENR Feb. 8, p 23).

During the cold weather of last February, cracks occurred at two identical locations in the top flanges of the girders in the east-channel and west-channel bridges in areas where the upper flanges were in tension. In both instances it appears probable that the roadway deck acted as a substitute tension flange, saving the bridge from collapse.

Since discovery of those incipient failures, the structure has been under intensive study and frequent inspection. That study revealed that the flange plates were of "rimmed" steel, which is unsuited to structural use because of its tendency to brittleness, especially at low temperatures, and due to its abnormal notch sensitivity. The steel had been ordered soon after the war when structural steel was in short supply and not always of best quality. Through an oversight, the mill supplied rimmed-steel plates that passed tests required by the Quebec Department of Public Works.

How the latter could have happened also was revealed by the engineers' investigation. They found that it only was necessary to increase the crosshead speed in the tensile test to duplicate the mill test results that enabled this material to pass as structural grade.

Neither of the breaks of last February occurred in welds. As a precautionary measure, however, during the past year, plates were riveted across butt welds in the flanges that were in tension. That these changes did not prevent disaster is obvious. Whether they were involved in the collapse will not be known until the spans can be examined. They could have been a contributing factor.

As to the possibility of sabotage, that seems most improbable when it is realized that there are only one or two points at which so complete a collapse could have been started by a bomb blast. Only a saboteur versed in continuous girder design would have picked those points. The most likely point for starting a progressive failure that would have dropped the spans at about where they now lie is near the center of the bottom flange of the span next to the center pier, on which the fixed bearing is located.

If such a break is found in the span next to the fixed bearing its discovery will answer most of the questions that are unanswered today. But even though no evidence is found to fully explain the collapse of this bridge, the evidence produced by the two fractures of last February makes the conclusion inescapable that such a collapse COULD HAVE OCCURRED had steel as brittle as that in the top flanges been built into the bottom.

Such being the case, the chief questions that this failure puts up to the civil engineering profession relate to the inspection of the steel. Was inspection faulty, or was it fairly normal? If the latter, then the whole system built up over many years of trying to prevent such an accident needs to be examined to determine wherein it is defective. Making a start on finding answers to these questions need not wait on recovery of the fallen spans.

Puerto Rico provides the show-how

WE HAVE IN PUERTO RICO a full-scale working model showing how an underdeveloped area can help itself toward economic betterment. Fighting to make economic growth—through industrialization— match a rapid population growth, our Caribbean compatriots have made Uncle Sam's strategic island doorstep a Point-Four proving ground.

Recognizing this, our State Department and the Insular Government are jointly sponsoring training courses on the island for technical men from Point Four countries. What these students of economic development are to learn, what Puerto Rico is doing, is detailed elsewhere in this issue.

Best evidence of success of the island's energetic program to encourage private investment in new, job-making industry is the fact that on February 16 its 100th new industry—another textile plant—will be inaugurated. Private investment in Puerto Rico since the start of the industrialization program has already made 14,000 new jobs.

This progress could not have been made without the will and determination of the Puerto Ricans. Therein lies the real lesson to be learned by the Point Four trainees. No amount of technical know-how can avail anybody anything unless there is a sincere urge to put that knowledge to work. No wealth of private capital is going to seek stock in a backward country unless it can enthusiastically promote its cause as a worthwhile risk.

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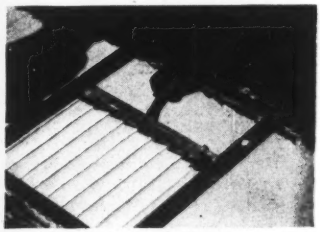
For more information write: Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.



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ENGINEERING NEWS-RECORD

FEBRUARY 15, 1951 Vol. 146 No. 7

Stabilization board tackles construction wage problems

Informal opinion check would put engineers, architects in employee classification if paid wages, thus under controls—Construction labor poses separate problem

Joseph Gambatese
Washington Staff

Wage controls cover all "employees." The Wage Stabilization Board has not issued an official interpretation of "employee," and may not do so. But it will give a ruling on a specific individual when requested.

Informally, WSB officials say that a person paid a wage or salary obviously is an employee. An engineer, an architect or other person performing professional services is an employee if he is on a payroll. He is not if he charges a fee.

Some persons in the construction industry may fall in between. What about a person who is under a contract or some other similar arrangement for his services?

• **How much to thaw**—All wages and salaries were frozen as of Jan. 25 by Economic Stabilizer Eric Johnston's order of Jan. 26. Now it is the job of WSB to defrost, its problem being how much to thaw it out, and when.

It is contemplated that construction industry wage adjustments will be administered, as during World War II, by a separate board for the industry. The board will be tripartite, with representatives of the industry, labor and the public. It was undecided, however, whether the board would be connected with the Bacon-Davis operations of the Labor Dept. (as before) or be attached directly to WSB. In any event, the board will be subject to WSB stabilization policies.

Both the industry and the AFL building trades prefer a separate board and have a committee meeting with WSB and Labor Dept. officials to arrange it. The AFL would like the board to operate in the Labor Dept.

• **Construction negotiations outside pattern**—Construction wage negotiations have not followed the pattern of industry in general. A great many negotiations take place all during the winter, with many settlements taking effect May 1.

The first major regulation issued by WSB, General Regulation No. 2, approved increases in wages which were agreed to on or before Jan. 25 and which were to take effect not later than Feb. 9. This served to approve the $1.60-a-day wage increase for soft and hard coal miners. It also relieved a number of construction settlements made shortly before the freeze.

• **Fringe benefits**—General Regulation No. 1 is also significant in that it includes so-called "fringe" benefits in the definition of wages and salaries subject to controls. It said prior approval or authorization of WSB is required of increases "in all forms of remuneration to employees by their employers for personal services—including, but not limited to, vacation and holiday payments, night shift and other bonuses, incentive payments, year-end bonuses, employer contributions to or payments of insurance or welfare benefits, employer contributions to a pension fund or annuity, payments in kind, and premium overtime practices and rates." That covers about everything.

Regulation No. 3 gave advance approval to increases made under federal or state minimum wage laws. (Bacon-Davis—prevailing wage—increases don't need approval, either, because the defense production act under which WSB operates says that wage stabilization decisions may not be inconsistent with any other laws.)

Regulation No. 4 exempted from controls the wages and salaries of state, county and local government employees, although they are expected to conform to general stabilization policies. WSB is uncertain as to its jurisdiction over wages of federal employees, but it probably will not exercise any jurisdiction if it has it.

In Regulation No. 5, WSB is also allowing day-to-day internal wage adjustments based on merit, length-of-service, promotions, job reclassifications, and the like. They must, however, conform to an established plan, or, if you have no formal plan, to what you did in 1950.

• **Catch up planned**—Workers who have not had the pattern fifth-round wage increase of about 10% since early 1950, will be allowed to get increases under a "catch up" formula. Thus far, no policy has been made on cost-of-living escalator wage increases and the annual improvement increases contained in the General Motors-type contract, or other deferred wage increases promised in the future. Many construction wage contracts signed in recent months provide for specific additional increases in 1951, irrespective of changes in the cost of living. Status of these increases are in doubt if they do not fit the "catch up" formula. This is the Damocels sword hanging over recent construction wage compacts.

Tobin sets AEC-Savannah River wages

Labor Secretary Tobin this week make a crucial Bacon-Davis Act decision on construction wage rates for the Savannah River H-bomb project of the Atomic Energy Commission. Minimum wage rates established Feb. 11 for the $600-million project set a pattern that will apply to many other big government jobs in non-unionized areas.

Wage rates set for the South Carolina project include: Bricklayers, $2.50 per hour; cement finishers, $2.00 per hour; plasterers, $2.25; unskilled laborers, concrete work, $1.00; carpenters, $2.00; electricians, $2.50; plumbers, $2.60; power equipment operators, cranes, derricks, draglines, shovels, $2.25; steam fitters, $2.60; truck drivers (under 1½ tons) $1.00.

E. I. du Pont de Nemours & Co., contractor for the H-bomb plant, will need 35,000 construction workers to build it—including 3,500 plumbers, maybe more. AFL leaders would like to have seen Tobin set the rates high enough to draw top scale mechanics from all the eastern states. Such rates would quickly break the prevailing wage scale in the area and would pave the way for organizing the workers over a broad belt surrounding the two South Carolina counties of Aiken and Barnwell, where the project is located.

Protests from state governors—

(Continued on page 24)

$1.1 billion plan for upper Colorado

A $1,139 million program for construction by the Bureau of Reclamation of 10 dams with a total installed capacity of 1,622,000 kw on the upper Colorado River and its tributaries has been unveiled by Department of Interior planners.

The plan, calling for projects in five states, is described fully in a report entitled "The Colorado River Storage Project and Participating Projects, Upper Colorado River Basin." Interior Secretary Oscar L. Chapman approved the report and sent it to the Colorado River basin states for comment.

The 10 proposed dams are divided into three categories as listed below.

• **Recommended** for authorization and early construction: Echo Park Dam, on the Green River near the Colorado-Utah line, four power units, total installed capacity of 200,000 kw, total cost, $165.4 million; Glen Canyon Dam, on the Colorado River in northern Arizona, seven units, total of 800,000 kw, $363.9 million; and Whitewater Dam, Gunnison River in western Colorado, three units, total of 48,000 kw, $40 million.

• **Recommended** for authorization and later construction:

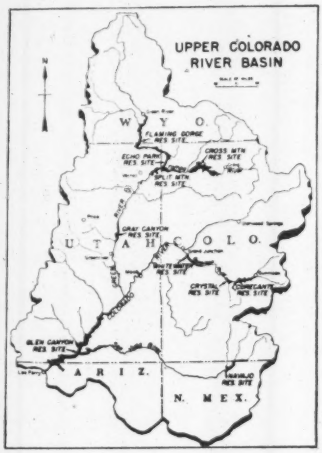
Navajo Dam, San Juan River in northwestern New Mexico, three units, total of 30,000 kw, $63 million, and Flaming Gorge unit, including Ashley Dam, Green River near Utah-Wyoming line, three units, total of 72,000 kw, $82.7 million.

• **Recommended** storage units for later authorization: Cross Mountain Dam, Yampa River in northwestern Colorado, two units, total of 60,000 kw, $51 million; Curecanti unit, including Blue Mesa Dam, Gunnison River near Sapinero, Colo., three units, total of 54,000 kw, $80.4 million; Crystal Dam, Gunnison River, east of Montrose, Colo., three units, total of 48,000 kw, $37.9 million; Gray Canyon Dam, Green River in east-central Utah, formerly known as Rattlesnake Site, four units, total of 210,000 kw, $178.4 million; and Split Mountain Dam, Green River in Utah below Echo Park, one unit, 10,000 kw, $76.4 million.

The proposed dams would have a storage capacity of 48.5 million acre-feet of water and would help irrigate some two million acres of land.

In announcing the program, Secretary Chapman said that the 1,622,000 kw available from these projects compares with only 125,000 kw of existing capacity in the upper basin at present.

The five projects for which immediate authorization is recommended would have a total installed capacity of 1,150,000 kw, with 38,480,000 acre-feet of storage capacity.



It is estimated that four to six years would be required to bring in first power at each of the proposed dams.

AEC wages set . . .

(*Continued from page 23*)

backed up by their legislatures—and from contractor groups in Georgia and Carolinas buttressed Tobin against AFL pressure. He came out with minimum wage rates that go a long way toward preserving local scales.

Neither he nor the AEC expect to see the job fully manned at those minimum rates. His announcement specifically stated that the AEC and du Pont would make any wage adjustments found necessary later, in accordance with applicable laws.

Most of the rates set by Tobin, as he explained them, represent construction wage rates actually being paid in South Carolina towns. But for some of the highly-skilled crafts—such as the 3,500 plumbers previously mentioned—it was necessary to go to the nearest large city, Atlanta, to find prevailing minimum wage rates for the big project, Tobin said. For a number of skilled trades, therefore, the labor secretary set minimum rates prevailing in Atlanta.

Tobin's Savannah River pattern sets a precedent for many big defense jobs to be put under construction by the federal government in the next two years. It can be applied also to projects already awarded—the AEC's $500-million Kentucky Plant near Paducah, the expansion at Oak Ridge, Tenn., and the Rocket Plant at Camden, Ark.

Report on water law shows lack of uniform policy

That there is not yet a single overall federal policy for comprehensive development of water and land resources is brought out in the report on "Water Resources Law" just issued by the President's Water Resources Policy Commission, of which Morris L. Cooke, of Philadelphia, is chairman.

This survey, which is Volume 3 of the commission's report, summarizes federal laws concerning the nation's water resources, portraying the development of such laws from the early 19th century. As the size of river development structures increased, the possibility of their use for many integrated purposes became obvious, and there was growing public recognition of the interrelation among the various structures on the same river system. For example, the storage or release of water at one dam directly affects uses and operation downstream, and electrical and hydraulic integration permits a series of dams to do more than if operated independently.

Inequalities in the selection of projects often work to the detriment of the best public interests, the report says—for example, in case of reclamation projects the law prescribes that project costs must be repayable out of project revenues—except in the case of flood control, navigation and preservation and propagation of fish and wild life.

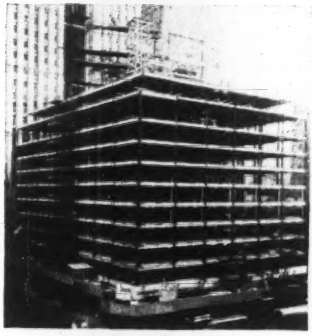
"Depending upon which agency constructs a project," says the report, "the same benefit is often subject to different reimbursement or pricing requirements. For instance, power and municipal water are subject to one set of pricing standards if they are Army projects, but different standards apply to Reclamation projects.

Repeated attempts to obtain federal legislation for control of the abatement of pollution have met with failure, the report states.

Air Force proposes use of idle Newark truck terminal

The Port of New York Authority announced that it has under consideration a proposal from the U. S. Air Force for the leasing for four years of the Newark (N. J.) Union Motor Truck Terminal (ENR, Oct. 21, 1948, p. 12).

Although completed last July, the terminal is not being used, due to a clause in the contract of Local 478 of the International Brotherhood of Teamsters, Chauffeurs, Warehousemen and Helpers that limits the transfer of freight at Newark terminals to shipments up to 5,000 lbs.



CREDIT REPORTERS' HEADQUARTERS—Steel work of 11-story office building for Dun & Bradstreet in Manhattan will be enclosed shortly. Moving stairs connect floors between first basement and fifth floor.

Morrison-Knudsen to build Cabinet Gorge power dam

Morrison-Knudsen, Boise, Idaho, was awarded a contract by the Washington Water Power Co. to build a hydro-electric dam and powerhouse at Cabinet Gorge on the Clark Fork River in Idaho's panhandle.

The exact amount of the contract was not disclosed. However, the total cost of the project—including mechanical and electrical equipment and transmission lines—was announced previously as about $40,000,000.

Schedules call for production of 200,000 kw of power some time in 1952. Construction is being started at once, with 500 workers employed now and an expected total of 1600 to be employed when construction is in full swing.

The 170-ft concrete dam will be erected across the Clark Fork about one mile from the Montana border. Ebasco Services, Inc., is agent for the power company and will handle design and supervision.

Engineer study submitted to Buffalo Commission

Knappen Tippetts Abbett Engineering Company has completed its economic and engineering study of the Port of Buffalo and submitted it to the Buffalo Port Commission.

The Commission was appointed in February, 1950, by the New York State Legislature to make a comprehensive study and survey of the port facilities of the city of Buffalo and to formulate plans for better terminal facilities for the waterfront and airport.

Methods of financing were also discussed.

Trestle not at fault in PRR wreck

"In my opinion, the trestle could not have caused the wreck."

This was the verdict of Enoch R. Needles, of Howard, Needles, Tammen & Bergendoff, consulting engineers, following an inspection of the scene of an appalling wreck on the Pennsylvania Railroad at Woodbridge, N. J., that took the lives of some 83 passengers and injured hundreds more Feb. 6.

The accident actually happened, Needles said, not on a temporary trestle, but on a 300 ft stretch of temporary track leading to the trestle. This approach turns out to the right from the main line (which is on a 5 deg curve to the left), curves left to parallel the main line, then right to approach the trestle.

According to Mr. Needles, the heavy steam locomotive left the track somewhere on the switchback temporary curve, and its momentum and that of the long train behind it, drove it across the trestle with its drive-wheels off the track, ripping up the trestle ties and track as it went. The ties on the trestle, following standard railroad practice (particularly since the trestle itself is straight) were not bolted to the stringers, but were dapped (or notched) into the trestle stringers. Normally, the weight of the train would create more than enough friction to keep them from moving.

Needles believes that the wreck may have been caused, therefore, by the train hitting the turnout and curves at excessive speed.

Earlier, suspicion had been directed at the newly-built trestle itself as a contributing factor to the disaster. But Mr. Needles reports that the structure was in fact overdesigned and overbuilt. New timber beams and new wood piles were used. Abutments, 42 ft apart, were permanent and of concrete construction. Between them were two intermediate timber bents, so that spans were about 14 ft out of their normal position.

Bid shaved, funds added for New York's Pier 57

The low bid of $6,273,500 submitted jointly last month by Corbetta Construction Co. and Merritt-Chapman & Scott Corp. for reconstruction of New York's Pier 57 was $1,500,000 above estimate. A $588,000 reduction has been negotiated, and the city's Board of Estimate last week appropriated another $1,181,000 for the project.

Prestressed concrete girders that were to span the floating-box caissons and cantilever out beyond them (ENR Jan. 11, p 46) will be replaced by ordinary reinforced concrete as an economy measure expected to save $470,000—mostly labor cost.

Work on this major substructure contract was expected to start immediately. As this issue went to press, no choice of site had been announced for constructing the buoyant concrete caissons, but it was expected that a shore site upstream would be used. The boxes built there would be floated down to the pier location.

There is at present a $459,000 contract in force for cutting off the wooden piles of the burned-out former pier and preparing the site. The revised price for the substructure is $5,685,500, and superstructure cost now is estimated at $4,500,000. This would put total cost of the 750-ft, concrete-and-steel pier at $10,644,500. Earlier estimates set the cost at $7,500,000.

The construction contract has been awarded.

Quebec tube construction studied by New York firm

Possibility of building a vehicle tunnel under the St. Lawrence River between Quebec City and Levis, at one of the greatest historic river crossings of Canada, is being investigated and reported upon by the New York contracting firm of Merritt-Chapman & Scott, according to an announcement of J. A. Racicot of Rimouski, Quebec. Racicot is president of Quebec Levis Tunnel Ltd., a company incorporated for the purpose of building the proposed tunnel.

Preliminary estimates put the cost of the tunnel at $20,000,000.

The St. Lawrence is almost a mile wide at this point, with a fairly swift current. Both banks of the river are steep rock cliffs which would make the construction of tunnel approaches unusually difficult.

At the present there is a ferry service between Quebec City and Levis which operates throughout the year, despite the floating ice with which the river occasionally is filled during the winter months.

The Quebec Bridge, a combined railway and highway crossing, is located four miles upstream.

Merritt-Chapman & Scott have been asked to report on the feasibility of the tunnel proposal and on its cost.

In New York, officials of the firm say that their engineers now are at work on the assignment, studying features of preliminary design, and preparing a cost estimate.

New York State to have $160 million for highway construction in 1951-2

About $60 million is earmarked for the cross-state Thruway, but materials situation may delay construction

New York State, during the fiscal year starting April 1, will have $203,000,000 available for construction, including $160,000,000 for highways, parkways and grade-crossing projects. This is based on an expected federal contribution of $25,000,000 for highways.

However, the schedule for highway construction may have to be revised if federal priorities for steel are not available for road building. As it stands now, $60,000,000 is earmarked for Thruway construction to be advanced from state funds, $25,000,000 to be appropriated from the Capital Construction Fund, $50,000,000 from grade crossing and highway bond issues previously authorized, and an expected $25,000,000 or possibly $38,000,000 in federal aid.

• **Money through bonds**—First instance money is needed for the Thruway pending the issuance of bonds by the Thruway Authority. On January 30 the Assembly approved a proposed amendment to the constitution to place the state's credit behind $500,000,000 in bonds for the cross-state Thruway. This amendment now goes to the Senate, where approval is certain, and to the voters next November.

Last year contracts were awarded for construction or reconstruction of 579 miles of state highways at a cost of $91,999,000. Under various contract awards, construction of 69 miles of the Thruway at a cost of $17,470,000 is called for. The largest such contract provided for the paving of 20 miles of the new highway near Syracuse at a cost of $2,800,000. The contracts called for two 25-ft lanes separated by a center mall. Exclusive of engineering, supervision and right-of-way acquisition, the cost of that section of the Thruway is averaging about $415,000 a mile, but this cannot be regarded as a measure of the probable cost in other sections where the terrain is different.

There is some possibility that work on the Thruway may be slowed up on account of the national emergency but Governor Dewey maintains that the Thruway is needed in the eventual defense set-up.

• **Other projects**—Other than highways, the principal projects to be undertaken by N. Y. State in the coming year are the start of reconstruction of Manhattan State Hospital on Ward's Island in the East River, and the construction of three hospital buildings and a power plant at the Central Islip State Hospital on Long Island.

Army Engineer procurement

Volume of construction equipment and materials purchases by the three branches of the armed services under the $87 billion total procurement program for the next two fiscal years is indicated in a small way by the total of commitments which the Army Engineers alone expect to have obligated by March 31 of this year.

Five major Army engineer procurement categories, with the sums expected to be obligated by March 31, are as follows:

Construction Equipment	$63,000,000
Construction Materials	101,000,000
Utility Equipment	14,000,000
Mapping, surveying, reproduction and special military equipment	11,500,000
Bridges and floating equipment	19,500,000

In addition, the Navy Department is expected to obligate $38,000,000 for the Corps of Engineers by March 31.

Boston street conditions improve, says Fin. Com.

Following investigations of poor construction and maintenance on Boston streets conducted by the Finance Commission of that city (ENR Sept. 28, p. 26) a trend toward better conditions is cited in the annual report the commission just issued.

It states that from 1945 to 1949 inclusive over $11 million was spent on street construction. With rare exceptions, however, paving jobs which should have been good for 10 years have not lasted five.

Civil suits have been entered in court by the city against some of the contractors who were revealed to have ignored specifications and given very much less in return. There has been no criminal prosecution, but the Finance Commission says that vast good has already resulted from the exposures.

The new commissioner of public works, George G. Hyland, the report says, has been most active in promoting measures which guarantee good pavement at reasonable prices.

A study is being made to develop a program to cover several years of street work. This will permit early and orderly construction and show the type of pavement a particular street needs, something previously ignored.

Truck weight law patrols protect from overloading

Stricter enforcement of the truck weight law was recommended by the Indiana Senate committee investigating the cause of highway deterioration in Indiana during the last two years. Other recommendations by the committee included stricter enforcement, more adequate inspection of new highway construction and the non-partisan employment of highway personnel.

"Since one of the major factors contributing to disintegration of the highways is, in our opinion, the operation of over-weight trucks on the highways, we suggest that all available weighting stations be manned on a 24-hour basis" . . . the report of the committee states.

Plastic road line markers tried in Nassau, Queens

White plastic traffic line markers along 3.36 miles of highways in Nassau and Queens Counties was included in lettings announced at Albany, N. Y.

A low bid of $4,900 was submitted by Traffic Lines, Inc., of New York City. The new plastic substitute for white paint, most modern of road marking devices, is calculated to save its cost many times over by eliminating the necessity of periodic coats of white paint used in marking the usual traffic lines and no-passing zones.

According to plans, grooves four inches wide and approximately one-half inch deep are ground into existing pavement where the traffic line markers are to be laid. After the channel is dug it is dried and cleaned of all dirt and dust. Then white, preformed thermo-plastic filler strips are placed in it.

All plastic traffic line markers, solid or broken, have a uniform width of four inches. The white thermo-plastic material is supplied in lengths of from 60 to 72 inches and is laid at a temperature of approximately 425 degrees Fahrenheit. Then the filler is rolled flat with a hot roller until all imperfections in the adjacent surface of the pavement are filled.

Solid, broken, single or double lines will be installed for safety purposes and the control of traffic. A broken line consists of 15 feet of marker alternating with 25 feet of space.

CONSTRUCTION BUSINESS

Proposed construction at all-time high

Engineering construction proposed but not yet put under contract has mounted to a total value of $52,113,049,000 as recorded by ENGINEERING NEWS-RECORD. This is 10% higher than it was at the close of 1949.

During 1950, projects came out of the backlog valued at $5.5 billion as they advanced to active construction. New projects proposed totalled $10.36 billion, but of these $5.5 billion replaced the projects moved out, so the net increase in the backlog for the year is $4.8 billion.

All sections of the country contributed to this increase, but the South, with a 14% increase, and the Middle West, with 16%, piled up the best showing percentagewise. The states west of the Mississippi have the biggest backlog, $13.3 billion. Middle Atlantic states are second with $13 billion.

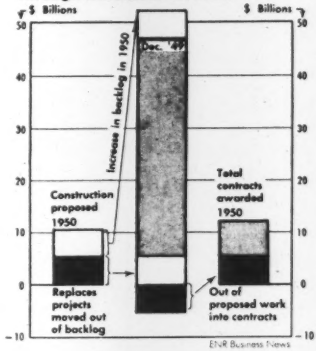
New York has the biggest state backlog, $6.5 billion and Texas is second with $5.7 billion. California's $5 billion and Pennsylvania's $3.3 billion follow. Also topping the $1-billion mark are Illinois and Ohio, $2.6 billion; Michigan, $1.7 million; New Jersey and Washington, $1.6 billion; Missouri, $1.5 billion; Massachusetts and Indiana, $1.1 billion; and Maryland, $1 billion.

Industrial buildings show a 30% increase in their proposed construction backlog. Commercial buildings, including mass housing are up 20%.

How the backlog grew in 1950, and where, are shown in the accompanying tables by regions and class of construction.

$52-billion backlog for engineering construction

Through December 31, 1950



Backlog by regions

Region	Total Dec. 31, '50	Change in '50, %
New England	$2,494,396,000	+ 6
Middle Atlantic	13,006,016,000	+ 8
Southern	5,898,470,000	+14
Middle West	8,430,943,000	+16
West of Miss.	13,294,573,000	+ 9
Far West	8,988,051,000	+ 8
United States	52,113,049,000	+10
Canada	8,678,009,000	+16

Backlog by kind of construction

Kind of constr.	Total Dec. 31, '50	Change in '50, %
Waterworks	$1,386,730,000	+16
Sewerage	2,182,325,000	+ 2
Bridges—Public	1,646,874,000	+11
Earthwk Irr—Drain	7,281,735,000	− 2
Streets & Roads	4,598,234,000	+ 0.9
Bldgs—Public	12,050,414,000	+11
Unclassified—Public	4,716,633,000	+ 1
Fed. Gov. Work	9,754,199,000	− 2
Bridges—Private	45,243,000	+ 5
Industrial Bldgs.	5,753,133,000	+30
Commercial Bldgs.	6,962,583,000	+20
Unclassified—Private	5,489,145,000	+17
Construction Private	**18,250,104,000**	**+22**
Public	**33,862,945,000**	**+ 5**

Industrial building contracts smash all previous records

Again the engineering construction awards are dominated by industrial building contracts that leave at the post all previous records. These total $385.9 million for last week. They shove total engineering awards to $555.7 million, the second highest week ever reported by ENGINEERING NEWS-RECORD.

This raises to $2,057.7 million the 6-week total for a gain of 69% over last year. Private construction, $473.5 million for the week is up 123% for the six weeks to $1,312.3 million. This record volume is due to the dazzling industrial building speedup of 867% over last year to awards totalling $892.9 million so far this year.

Public works were up 18% to $745.4 million for the six weeks. State and municipal awards are up 35% to $439.4 million and federal works are up 0.6% to $305.9 million.

By classes of construction public housing contracts at $111.1 million are running 336% ahead of last year. Privately financed mass housing, at $258 million, is 22% behind its high volume of last year. Commercial building of the type frozen until Feb. 15 is $100.6 million for the six weeks, 17% below the volume a year ago.

Sewerage construction, at $42.7 million, is 76% higher than last year; waterworks contracts, at $19.4 million, are 57% lower. Highways, at $102.2 million to date, are up 8%; bridges, at $39 million, are 17% higher.

Private mass housing awards last week are up sharply to $68.9 million and commercial building for the week are low at $13.3 million.

The large projects accountable for the record $555.7 million week are topped by the $300 million Fairless Works steel mill in Pennsylvania. A power plant in Ohio at $32 million, a Chrysler plant in California for $10 million and a $5-million detergent plant in Missouri also swell the industrial building total.

Private mass housing includes a $25-million development in Colorado, and a $15-million project in Flushing, N. Y.

Public housing this week includes a $6.5 million contract at Worcester, Mass. and $8-million in awards at Louisville, Ky.

Federal civil works backlog

Many of the big federal public works cannot be completed in a single, or even in three or four fiscal years, so a backlog of projects always exists on which construction has been started but not yet completed. This backlog of continuing projects is estimated in President Truman's 1952 budget message at $10,156.8 millions at the close of the current fiscal year, June, 1951. (The ENR backlog of federal construction projects proposed and not yet under contract stands at $9,754.2 million as of Dec. 31, 1950.)

In the 1952 budget, in addition to money asked to advance these continuing projects, is a request to start new projects estimated to cost $1,641 million.

The 1952 budget asks for $2,479.4 million for continuing projects and $116.4 million to start the new projects. If these funds are provided the backlog of continuing projects in fiscal '53 will be $9,201.8 million.

The foregoing figures all apply to direct federal construction. In addition, legislation provides for a backlog of federal grants to highways and airports of $1,849.9 million after a 1952 budget of $683.8 has been met.

Loan authority for low-rent public housing and other purposes carries a '52 budget of $363.7 million and thereafter a backlog "required to complete" of $1,310 million.

Cost indexes show rise

Cost of commercial and factory buildings climbed to 227.4 in December, using the average of 20 major pricing areas for 1926-29 as a base of 100, according to E. H. Boeckh & Associates. This new high compares with 224.7 for November and with an average of 218.6 for all of 1950. It is up from 206.3, the low point in the 1949 dip, reached in August.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 92, went to press.)

Steel Mill—Sheffield Steel Corp., subsidiary of Armco Steel Corp., Houston, Tex., plans a $20,000,000 seamless tubing mill, $12,243,981 steel ingot and plate mill, $61,500,000 blooming mill, $12,500,000 blast furnace and $10,275,000 open hearth furnace, all at Houston, Tex.

Housing—New Orleans Housing Authority, New Orleans, La., has awarded contracts for St. Bernard Housing Project and Florida Avenue Housing Project to Robert E. McKee, Dallas, Tex., at $7,061,000 and $2,439,000. The St. Thomas Housing project was awarded to R. P. Farnsworth & Co., New Orleans, at $4,924,500. The architects on the projects are Benson Olschner, Feret & Wolf, Nolan, Norman & Nolan Associates, Andry & Feitel and August Perez & Associates, all of New Orleans.

Pennsylvania Turnpike—Enabling legislation has been introduced into the Pennsylvania State Senate for the purpose of extending the Pennsylvania Turnpike from Erie to Scranton. Estimated cost is $150,000,000.

Finance Center—Department of the Army, plans Army Finance Center and Adjutant General's School, at Fort Harrison, Ind. Cost will be about $20,000,000. U. S. Engineers, Chicago, will be in charge of project and Hurley, Ellington & Day, Detroit, Mich., are consulting engineers.

Steam Generating Plants—Bonneville Power Administration, Portland, Ore., plans two steam generating plants, one at Port Angeles and one at Longview, Wash., to cost $15,000,000 each.

Chemical and Explosives Plant—A $40,000,000 chemical and explosives plant is planned by the Canadian Chemical Co., Ltd., c/o Celanese Corp. of America, New York, N. Y. on site seven miles east of Edmonton, Alta.

Water Supply—Colorado River Municipal Water District, Big Springs, Tex. received low bid for supply lines from McKenzie Construction Co. and Ben Sira & Co., Dallas at about $3,911,000; low bidder on earth dam was J. Moorman & Sons, Wylie, $1,452,877. Freeze & Nichols, Fort Worth, are consulting engineers.

Box Canyon Dam—Harza Engineering Co., Chicago, Ill., has been selected as consulting engineer for hydro-electric dam on Box Canyon, Pend Oreille River, Washington. Estimated cost is $11,000,000. Pend Oreille County Public Utility District, Newport, Wash., is owner.

Plants—Gulf Oil Corp., Port Arthur, Tex., is taking bids for the construction of $3,000,000 plant to manufacture iso-octyle alcohol, at Port Arthur. The company also plans a $10,000,000 ethelene plant, at same site.

Hospital—U. S. Engineers, New York, N. Y. temporarily postponed bids to have been opened February 8, for $15,000,000 Veterans Hospital, in New York City. New bid date will be announced.

Steel Mill—Detroit Steel Co., Detroit, Mich., plans a $50,000,000 steel mill at Portsmouth, O., which will include a second blast furnace as well as four open hearth furnaces, a blooming mill, a hot strip mill and a cold rolled steel mill.

Power Plant—Ohio Power Co., subsidiary of American Gas & Electric System, Cleveland, O., plans power plant on Muskigum River, twelve miles south of McConnellsville, O., to cost about $45,000,000.

Military Camp—Bids will be taken February 20, for military camp at Yakima Firing Range, Yakima, Wash., by the U. S. Engineers, Seattle. Cost is estimated at $5,340,000.

Residences—Likens, Foster & Associates, Albuquerque, N. M., plans $9,950,000 dwellings at El Paso, Tex.

Pipe Line—Brown-Lite Construction Co., Tulsa, Okla., will construct a $3,500,000 pipe line from Borger, Tex., to Yale, Okla., for the Phillips Petroleum Co., Bartlesville, Okla. S. S. Learned, Bartlesville, is engineer.

Apartments—L. W. Richards, Wilmington, Del. will construct a $5,000,000 apartment development at Newark, Del. Work will be done by owner's forces.

Barracks and Mess Halls—Bureau of Yards & Docks, Navy Department, Arlington, Va., plans barracks and mess halls at Naval Air Training Center, at Millington, Tenn., to cost $6,000,000. Wyatt C. Hedrick, Dallas, Tex., is engineer-architect.

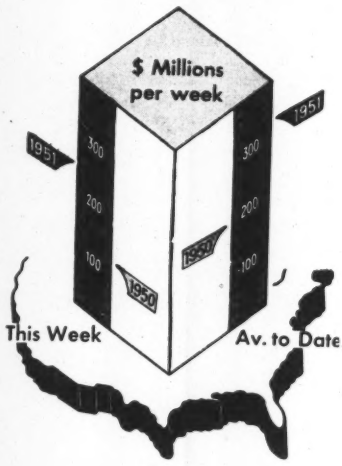
Housing—Garling Construction Co., Detroit, Mich., plans constructing housing in Melvindale, Mich., by own forces. Estimated cost is $4,000,000.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926	1949
Constr. Cost	Feb.'51	536.74	258.01	112.32
Bldg. Cost	Feb.'51	396.95	214.58	112.84
Volume	Jan.'51	665	270	192

Activity This Week
As reported to ENR
(in millions of dollars)



Amount of contracts let

	Week of Feb. 15 '51	Cumulative 7 wks 1951	1950	% chge
Federal	$33.4	$339.3	$317.2	+7
State & Mun.	60.8	500.2	347.8	+44
Total Public	$94.2	$839.5	$665.0	+26
Total Private	162.3	1,474.7	673.1	+119
U. S. Total	$256.5	$2,311.2	$1,338.1	+73

Contracts by type of work

	This Week	Cumulative 7 wks 1951	1950	% chge
Waterworks	$1.2	$20.6	$45.3	−55
Sewerage	4.4	47.1	25.7	+83
Bridges	4.6	43.6	35.2	+24
Highways	18.2	120.4	102.4	+18
Earthwork, Waterways	20.1	43.5	42.8	+2
Buildings:				
Public	21.2	393.4	335.9	+17
Housg., pub.	14.6	125.7	25.8	+387
Housg., priv.	40.2	298.2	375.7	−21
Commercial	13.0	113.6	133.2	−15
Industrial	63.9	956.8	112.3	+752
Unclassified	55.1	151.3	103.7	+46

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

	1951	Cumulative 7 wks 1950	% chge
Corporate Securities	$274.7	$329.6	−17
State and Mun.:			
Excl. housing	204.2	218.8	−7
Housing	125.7	130.6	−4
Fed. loans, private constr.	73.4	0	0
Total Non-Federal	$678.0	$679.0	−0.1
FEDERAL	2,602.5	0	0
Total Capital	$3,280.5	$679.0	+383

CIVIL DEFENSE

Hoboken caves—The possibility of digging into the New Jersey Palisades for safety places is being considered by the Hoboken, N. J., civilian defense committee. For this purpose City Engineer Patrick Caulfield and Architect Anton Vezzetti have started a survey of the land along the Hudson River. The shelters would be large enough not only for Hoboken residents but also for thousands of others from the metropolitan section.

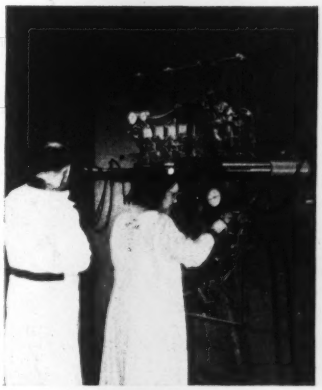
Geiger counter to the rescue—An experiment with a Geiger counter, a device which detects radioactivity in water, will be conducted in River Forest, a Chicago suburb. The instrument flashes a red light when the quantity of radioactivity in the water reaches a dangerously abnormal point. Such a warning would be invaluable not only in case of an atomic attack, village officials said, but also if the water should become contaminated by other means.

Library shelters proposed—The Cambridge, Mass., city council has asked City Manager John B. Atkinson to direct Walter L. Cronin, civil defense director, to negotiate with Harvard University officials for use of the Widener and Lamont libraries as bomb shelters. Some books in the libraries are stored three stories underground.

Target areas—Government officials define target areas as including those communities in which there might be important military installations, large industrial facilities, or cities where vital government operations are housed.

Backyard shelter—H. P. Doherty of Redondo Beach was the first contractor to take out a permit to build a backyard bomb shelter after California Civil Defense authorities recommended such construction by homeowners. In his shelter walls, ceiling and floor will be of concrete 12 in. thick and reinforced with steel. Doherty estimates the structure will protect six persons and withstand a pressure of 30,000 psi.

For parking and bomb shelter—Recommended for Nashville, Tenn., by H. W. Lochner & Co. is a $1,130,000, three-tiered underground parking garage to be used also as a bomb shelter, if needed. It would be in Memorial Square in front of the Tennessee state capitol.



HOT STUFF—Radioactive substances are handled with the greatest respect inside the "hot lab" at Brookhaven National Laboratory, Upton, N. Y. Workers are protected against radiation effects by cells which enclose "hot" experiments. Each cell is lined with stainless steel, backed up by concrete walls three feet thick. Doors are of steel one foot thick, weighing 11 tons each. At left, one technician observes through a periscope while the other conducts an experiment. At right, a lead "pig" containing radioactive material is lowered into a storage well. Second technician is placing less active material into a storage compartment shielded by steel doors.

Steel expansion plans: $150 million for plant

Gibraltar Steel Corporation plans a $100,000,000 steel mill along the Detroit River at Trenton, Mich., seventeen miles from Detroit.

The tract of land has a frontage of 5,000 feet along the river, and is 900 acres in size. The plant planned for the site can be completed in 18 months if priorities are granted.

Steel making facilities include a coke oven, blast furnace, four open hearth furnaces, a blooming mill and a hot and cold rolled sheet mill.

Initial capacity is scheduled for 800,000 ingot tons a year. Finished steel products would be less.

• **RFC helps**—The Reconstruction Finance Corporation one of the Federal government's major finance agencies will be asked to provide most of the funds for construction. An initial $10,000,000 of capital is to be raised privately. This would leave $90,000,000 to be financed by the RFC. The National Production Authority will be asked to issue a certificate of necessity for the plant.

Another development on the steel front is the plan of the Detroit Steel Corporation to double its ingot capacity in a $50,000,000 expansion program at its Portsmouth, Ohio, plant.

These new facilities would include a second blast furnace which would raise annual ingot capacity to 1,290,000 tons a year. Finishing capacity, according to Max J. Zivian, president of Detroit Steel, will be raised from 180,000 tons to more than 1,000,000 tons a year.

Four open hearth furnaces of 250 ton capacity each, a new blooming mill, a 54-in hot strip mill and a new 54-in cold rolled sheet mill also make up the new equipment.

Most of the Detroit program will be subject to accelerated amortization, Mr. Zivian said.

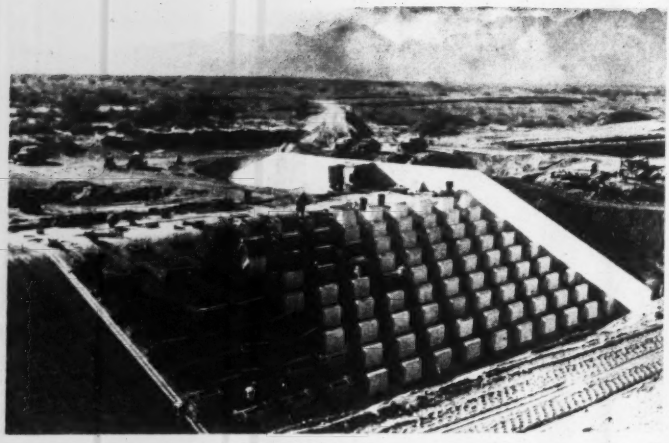
New limestone helps cement co. expansion

With an extra 4 million tons of newly-discovered limestone deposits near its present quarry—and a hope that the provincial government will switch from asphalt to reinforced concrete surfacing for its main highways—British Columbia Cement Co. is undertaking a $2 million expansion which will increase output by more than 50%.

The company's plant at Bamberton, on Saanich Inlet, Vancouver Island, now has three dry kilns, and a new one now is being built by Vickers-Armstrong in England, with delivery expected in eight months. Bamberton is about 18-mi north of Victoria.

The new kiln, which will be shipped in sections, is 350 ft long and 10 ft 6 in in diameter. Built of 2-in steel, it will be twice as big as those already in operation.

Annual output of the company will be increased to 2 million barrels a year, from the present 1,350,000.



TEETH FOR THE DESERT—Morrison-Knudsen Co. crew placing reinforcing steel and erecting forms for more concrete baffles in a chute section of a wash siphon outlet for the Wellton-Mohawk Canal near the Gila River in southwestern Arizona. Siphon is designed to protect canal against flash floods. Welton-Mohawk division is a Reclamation Bureau project to serve some 75,000 acres with Colorado River water, diverted at Imperial Dam, near Yuma.

N.W. power projects go on apace

Spurred by defense needs, three Pacific Northwest privately-owned power utilities have announced plans for dam construction which would add some 420,000 kw of generating capacity to that power-hungry area.

The companies, their proposed projects, and generation:

Portland General Electric Co, Pelton Dam on Deschutes River in north central Oregon, 120,000 kw.

Pacific Power & Light Co, Yale Dam on Lewis River in southwestern Washington, 100,000 kw.

Washington Water Power Co, Cabinet Gorge project on Clark Fork River in northern Idaho, 200,000 kw.

Applications for federal permits have been filed at Washington on all three projects.

Of the three only the Pelton project faces serious opposition from fishing interests, which are opposing dam construction at all points where they interfere with salmon runs. Original plans for construction of this project by Pacific Northwest Supply Co, which was sponsored jointly by Portland General Electric, Pacific Power & Light and Washington Water Power Co, were blocked by the Oregon State Fish Commission.

In the revived project Pacific Power & Light and Washington Water Power have dropped out of the picture and PGE will take over the assets of Pacific Northwest Supply, which, under original plans, would have divided its production among the three companies.

Approval by the Federal Power Commission, the State of Oregon and the U. S. Indian Service is required before construction can be started. The Indian Service is involved because of treaty rights at the dam site by Warm Springs Indians.

James H. Polhemus, PGE president, said his company will endeavor to work on an arrangement with the State Fish Commission before hearings on the project are held. Revision of plans for aiding fish life will include construction of a down-stream re-regulating dam to eliminate rapid stream flow as a protection to fish.

Site of the Pelton Dam is an 800-ft deep canyon. Height of the structure would be 200 ft from foundation to crest, which would raise upstream river level about 150 ft and create a lake 8 mi long. Cost of the project is estimated at $20 million.

Pacific Power & Light's planned Yale project would virtually duplicate the company's Merwin Dam. The site is at the upstream end of the 12-mi long lake created by the Merwin project. Construction would be of the arch type, rising 285 ft above the normal river level and 305 ft above bedrock.

The Yale project would be the second step by PP&L in development of Lewis River's potential power production of 500,000 kw. Initial installation would be two 50,000 kw generators, but with provision for two additional generators of the same capacity.

No objection from fishing interests is expected, because provision is made in the Merwin Dam for capture and transplanting migratory fish.

Flatiron: Power plant construction lies ahead

Construction will begin late this spring on the Flatiron power and pumping plant—the last major feature of the giant Colorado-Big Thompson project, the Bureau of Reclamation says.

By 1953 the power plant should supply 284 million kilowatts annually—enough to supply the city of Denver for four months.

Bureau power experts said Flatiron will add 7,500 kilowatts per hour during periods of peak demand, through use of newest reclamation hydro-electric principles.

Waters will be lifted from Flatiron reservoir 240 ft to Carter Lake through a mile-long pressure tunnel. There the water will be led down through the St. Vrain supply canal into an irrigation network. This will be done at night.

During the day the waters will be drawn back from Lake Carter generating additional electricity on the way. This is called the "up and down process."

It can be repeated over and over, and will add 7,500 kilowatts per hour. Flatiron will be one of the few projects in the world to use such a system.

The Bureau says the Colorado-Big Thompson "prosperity package" for northern Colorado is being rushed at maximum speed. Full operation is scheduled early in 1953.

Construction starts on Albeni Falls Dam

Construction was started Jan. 26 on the Army Engineers' $31,070,000 Albeni Falls Dam on the Pend Oreille River in Bonner County, Idaho.

A ground-breaking ceremony was held at the site 2 mi east of Newport, Wash. The project will provide water storage, power and flood control. Albeni Falls will be capable of generating 42,600 kw at the site and the storage will firm power at Grand Coulee, Rock Island and Bonneville dams. It will also be effective at the Chief Joseph and McNary dams now under construction on the Columbia River.

States study road-building finances

Road construction financial problems of Missouri, North Carolina, Tennessee and Nebraska are typical of those confronting many other states at this time.

In Missouri, four bills presented to the state legislature contain features of Governor Forrest Smith's suggestions for a program to reshuffle plans for financing highway construction. Part of this is an effort to force transport truck lines and motorbuses to pay a greater share of the cost of maintenance of the roads they use and help to wear out. Another proposal is to double the state tax on gasoline from two to four cents a gallon.

It is estimated that the proposed legislation plus federal highway funds would yield a gross income of $78,000,000 annually, as compared with its present income of $53,406,000 a year from all sources.

In North Carolina, Governor Kerr Scott calls ill-advised a bill introduced into the state legislature providing for the state to take over, without additional taxes, the construction and maintenance of old city streets which are parts of the state highway system.

The North Carolina League of Municipalities, which has proposed that the state take over the city streets by raising $9,000,000 a year by increasing the gasoline and automobile license taxes, also is expected to protest the measure. Governor Scott has endorsed the League's proposal.

Under the bill now being considered, the state would take over the construction and maintenance of all city streets which are links of the highway system at an estimated cost of $11,000,000 a year, and would, in addition, distribute $5,000,000 among cities and towns for use on city streets which are not parts of the highway system. Both amounts would be in addition to $2,500,000 now being distributed among municipalities for such purposes.

Tennessee has a $10,000,000 a year rural road program, and the state legislature is considering the administration's bill to boost state excise taxes by from four to six million dollars annually. The bill calls for the use of the remainder of the state's general fund surplus—which stood at $33,000,000 two years ago—and then to issue bonds for whatever is needed to continue the roadbuilding program for another two years.

Nebraska's highway department spent $930,567 more in 1950 than in 1949—$20,398,239 as compared with $19,402,777.

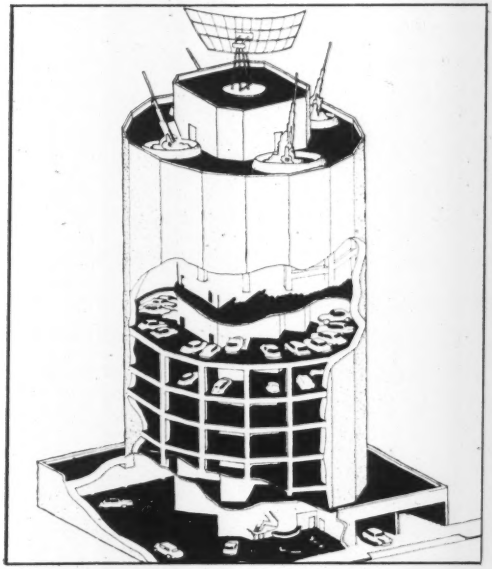
Engineer Fred Klietsch reports that construction obligated by contract during the year included 396 miles of highway grading, 32 miles of concrete paving, 191 miles of bituminous mat and 184 miles of gravel surfacing.

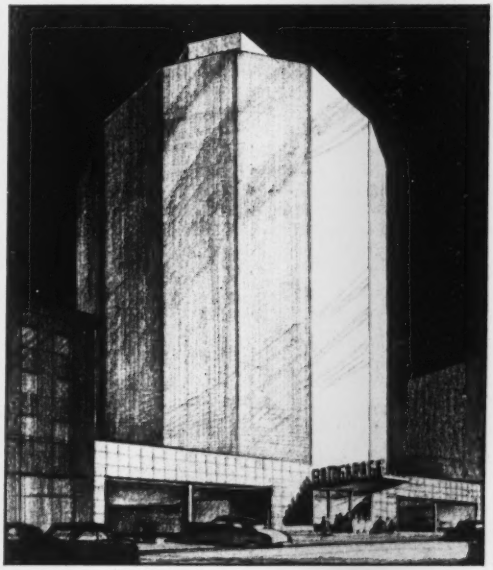
Also obligated was construction of 84 bridges and three viaducts.

Court dissolves combine on concrete block machines

Found to be a combine functioning in restraint of normal trade, two Michigan companies manufacturing concrete block machines were ordered by a Detroit federal court to dissolve their relationship.

The Besser Mfg. Co. of Alpena, Mich., was ordered to sell the $7,000 shares of stock owned in the Stearns Mfg. Co. of Adrian, Mich. Block-making machine patents, held by inventors Louis Gelbman and Hamlin F. Andrus of New York and under exclusive contract to the Besser-Stearns combine, were ordered to be made available to anyone in the industry.





DUAL-PURPOSE TOWER GARAGE awaits assurance on materiel before building. Site has been selected in mid-Manhattan, N. Y. City, for the first Rotogarage, sketched above and patented by Albert Buranelli. The 16-sided, reinforced-concrete structure, 12 stories high, would have four elevators to raise autos to the various levels. Rotary platforms would form parking floors for 500 cars—an empty space being rotated into position to receive a car coming off an elevator. Wall would be one foot thick, when used for a garage. Designers say structure could be build as an above-ground bomb shelter and flak tower. Cost is estimated at $1,675,000. Guy B. Panero is consulting engineer; Petroff & Clarkson are architects.

Puerto Rico — school for Point Four engineers

Preventive medicine, improved sanitation could not stamp out the island's basic chronic ailment. In a way they aggravated it. The real disease was poverty; the economy was sick—more so than the people. A cure was found, is being effected.

Arthur J. Fox, Jr.
Assistant Editor

LOOK TO PUERTO RICO for an idea of how Point Four should work.

This U.S. island territory in the Caribbean is an example of how a backward area can move forward—lifting itself in economic stature with a success that has made the island a training ground for others. The construction industry and its practitioners figure heavily in the program.

Not qualified for Point Four assistance (because it's a U.S. possession) Puerto Rico is participating in the program as a school for those who are.

So far, 16 trainees (15 civil engineers and a medical doctor) have been assigned in-service training tours with insular agencies under a State Department approved program for schooling technical men representing Point Four eligibles. Another 10 students of economic development have come to the island under United Nations sponsorship. And two more have trained there on grants from the Institute of Inter American Affairs. In all, 11 Latin American countries and Egypt have gone to the island territory to benefit by its experience in economic uplift.

• **Industrial revolution**—The uplift is that "Operation Bootstrap" the mainland has heard so much about. Puerto Rico is in the midst of an industrialization program designed to keep living standards abreast of a mushrooming population due to double in the next 50 years.

Population is the island's problem—population now growing faster than any other in the world, as modern sanitation and medicine cut the death rate while the birth rate stays high. There are 2,200,000 people crammed, 650 per square mile, on a mountainous island 95 miles long, 35 miles wide.

The space can't possibly expand. The population apparently can't help but expand. The economy simply must expand.

Those are the factors Puerto Ricans faced realistically after World War II. Escape to higher pay on the mainland was recognized as a relief (it netted 35,000 in '50) but not a solution. There were those who rationally reviewed the island's economic situation only to throw up their hands and call birth control the answer. (It may become an influence, but never a solution.) That left industrial development as the way.

They founded their thinking on the premise that Puerto Ricans—given training—can do anything that any other people can do. Moreover they started out with the realization that their program has to work.

• **Little natural wealth**—Unlike many Point Four lands, Puerto Rico can't advance economically by simply tapping untapped natural wealth. It will take resourcefulness rather than resources to assure the island's future stability. That's why it makes so fitting a place for others to learn; it offers an example of what technical assistance and invested money can do when there is very little to do with.

Of course, the island is not completely devoid of resources. Perhaps its greatest is the fertile soil that in 1950 produced a $174 million sugar crop (which could have meant prosperity back in 1920 when the population was only some 60% of today's). Its second great potential resource is the very manpower that is now the island's bane.

Neither is the territory without advantages. In its fish-nor-flesh status with the U.S., Puerto Rico has all the advantages of a protected market for its sugar, needlework and rum while it doesn't have the full financial obligations of statehood. U.S. protection, preferences and aid put the island in a favorable starting position; in lieu of natural riches it has the world's richest market.

Politically, the island seems set up to succeed. It has in Luis Muñoz Marin its first governor elected by Puerto Ricans. Respected and trusted, he has the people behind him—the recent embarrassing flare-up of Nationalist fanaticism notwithstanding. And, very important, he has an energetic group of young men around him—missionaries, making up the theories where none exist, efficiently and doggedly pulling at the bootstraps of the economy.

In a backward economy the government is the only real financial strength—and thus the only prime mover. So, in Puerto Rico the government had to open the way (with a fund of rich rum revenues collected on the U.S. during the whiskeyshort days of World War II.)

• **The development agency**—The government agency doing the job is the Economic Development Administration headed by Teodoro Moscoso. This subdivides into groups in charge of promotion, tourism, research, trans-

NEW HOSPITAL—a place to treat one of the peoples' ills, tuberculosis. This building is part of a new 800-bed addition to the TB hospital in Rio Piedras, near San Juan.

portation and (its best known group) PRIDCO—the Puerto Rican Industrial Development Company.

This group's activities are chiefly promotion, investment and engineering. At the outset it was a government-in-industry deal, but the last four plants it operated were unloaded last fall to private interests. Now PRIDCO concentrates energies on encouraging U.S. industries to set up shop in Puerto Rico, offering them plentiful cheap labor, free engineering services and (if they qualify) tax exemption.

The tax-exemption setup is this: No federal taxes are collected from individuals or corporations on income derived on the island. No insular tax (property, municipal or income) is levied against eligible industries. This 100% tax holiday was begun in 1948 to carry through June 30, 1959, when it will be done away with in four equal yearly decrements through 1963. (It has been indicated that some form of continued tax relief for industry might be instituted before this present holiday ends). Personal income tax must be paid by wage earners on the island: rates are very low for the first few thousand dollars then zoom upward at a soak-the-rich rate. Chances are if you've reached the $10,000-a-year bracket Puerto Rico would get about as much of your income as do your state and federal governments now.

NEW PLANT—a place to ease one of the island's ills, unemployment. This is Beacon's new plant, opening tomorrow, typical of those Puerto Rico is building for new industries.

• Construction not new—To qualify for the tax exemption, new industries must first and foremost show promise of absorbing some of the island's perennially unemployed—about 10% of the 700,000 work force. Most enterprises new to the island and some already existing there can qualify. But construction cannot—apparently not even when done on a previously unheard of scale with methods and equipment new to the island—although this is being contested.

Availability of labor and the tax angle lumped together make pretty attractive bait to dangle in front of investors. But it's often not enough.

Puerto Rico is not fully the never-never land of the industrialist. While shorn of taxes and without labor shortages, it does have its disadvantages. It's an island—a rural, tropical island. Its geography means remoteness from sources and markets, necessarily high inventories and transportation problems—New York is 3½ days away by sea, a costly 6 to 8 hours away by air. The rural nature of the land is a drawback that's due to change. The 40% farm population is to be cut to about 30%—somewhere near the U.S. average. And in the process, the rural inadequacies in communications and utilities should be lessened.

Climate is one thing that won't change. It's tropical—delightful in winter, humid-hot (to 94 deg) in summer and rainy (with risk of hurricane) in fall. And being what it is, the climate, as elsewhere in the tropics, does have the effect of slowing the pace of human activity. It's a mañana land. Continentals working on the island can become as frustrated as the natives are satisfied with a pace somewhat slower than speedy. This means managerial and productivity problems.

• Free engineering offered—But, if the nature of the land and its people tend to cancel some of the dollar savings on taxes and labor, PRIDCO's engineering services lend heft to the favorable-factors side of the scale.

Here's what PRIDCO does (Point Four countries, please take note):

They start working with the prospective industrial settler as soon as he sets foot on the island. Chances are he puts up at the fabulous Caribe Hilton Hotel (ENR Mar. 30, p. 40) which the agency built for over $7,000,000, just for him. From there they'll take him around the island in an effort to locate the best site for his plant. Special industrial engineering problems will be worked out for him by PRIDCO's consultants, Arthur D. Little, Inc., Cambridge, Mass.

Sometimes they find him a suitable building for his operation, but these now are pretty well used up. So they survey his needs, design a building, build it and rent or sell (preferably sell) it to him.

Horacio Subira, civil engineer, is acting as development vice-president. His full-time engineering force of about 15 has in the past three years supplied a score of buildings—mostly in the 35,000-sq ft range, although Textron and Crane China were each supplied structures housing near 130,000 sq ft.

Designers are standardizing in every way possible, cutting frills and variations, so that they now can offer their average size structure (reinforced concrete frame, concrete floor on fill, block walls, industrial sash, and precast concrete roof slabs) for about $6 per sq ft.

PRIDCO generally lets construction of the plants to local contractors, occasionally puts one up by force account to get the feel of prices.

• It takes money—All this costs Puerto

Point Four:

President Truman, in his 1949 inaugural address, listed four points to be followed by the U.S. in international relations. Continued support of the UN, furtherance of world recovery programs, and strengthening of free nations against aggression were the first three. The fourth:

"a bold new program for making the benefits of our scientific advances and our industrial progress available for the improvement and growth of underdeveloped areas . . . we should make available to peace-loving peoples the benefits of our store of technical knowledge in order to help them realize their aspirations for a better life. And, in cooperation with other nations, we should foster capital investment in areas needing development. Our aim should be to help the free peoples of the world, through their own efforts, to produce more food, more clothing, more materials for housing, and more mechanical power to lighten their burdens."

GOVERNOR—first one ever to be elected by the Puerto Rican people—Luis Muñoz Marin.

PROMOTER — Economic Development Administrator with stateside ideas—Teodoro Moscoso.

PLANNER—boss of board coordinating construction and Point Four participation —Raphael Pico.

CIVIL ENGINEER—typical of many providing plant and services for new industry—Antonio Luchetti.

"development must . . . come largely from the people concerned"

. . . . Point 4

Rico money. PRIDCO was set up initially with half a million dollars; it got a $6½ million loan from the Government Development Bank (the island's RFC) to build the hotel, still government-owned but Hilton-operated; and to date, some $30,000,000 has been invested.

The investment-by-industry goal is $30,000,000 per year. This is figured by PRIDCO as the rate needed to supply 10,000 new jobs a year and thus double the living standard in 10 years.

• **It takes construction**—As the Economic Development Administration meets the people and helps solve their individual problems of moving in (new industry No. 100 moves in Feb. 16), planners, designers and construction men work behind the scenes to supply the water, power, light, highways and housing needed to keep industry happy in its new home.

Reviewing all construction projects and formulating fiscal programs is the Puerto Rico Planning Board (ENR Feb. 6, 1947, p. 197). It master-plans all public construction and controls private construction through its powers over use and exchange of land. It is this board (Raphael Pico, geographer, Santiago Iglesias, architect, and Carlos Passalacqua, civil engineer) that coordinates the island's activities in training Point Four students.

Providing electric power, while pushing a sizable scheme to irrigate 30,000 acres on the island's arid southwest corner (ENR Nov. 4, 1948, p. 6), is the Water Resources Authority. Except for its limited resources, WRA follows the TVA pattern—builds, owns and operates—even has as its chief engineer an ex-TVA chief consulting engineer, Carl Bock. Antonio Luchetti is executive director of the authority—and one of the sparkplugs in the island's drive to industrialize. Jackson & Moreland, Boston, are retained as consultants to WRA, and they designed the new $14,000,000 oil-steam San Juan power plant. Raymond Concrete Pile Co., built the structure, which now houses two 20,000-kw units and will get a third as part of the initial installation later this year. WRA now has 17 plants supplying 200,000 consumers with 600,000,000 kwhr yearly. Demand is growing at a 10% per year rate.

Water supply got a big boost late in 1949 when the Aqueduct and Sewer Authority sold a $22,700,000 revenue bond issue for island wide improvements. Last year it opened $2,000,000 Loiza Filtration Plant, now capable of supplying 30 mgd of treated water to metropolitan San Juan and its environs. Sergio Cuevas is the authority's executive director, and Buck, Seifert and Jost, New York, are its consultants, designers of the filtration plant plus the dam and appurtenances now under construction by Sollitt Overseas Construction Co., Chicago. The authority is a centralized agency of the insular government responsible for the sanitation needs of 77 communities on the island. An article on the Loiza River project will appear in a subsequent issue.

Sanitary-engineering-wise Puerto Rico is far from out of the woods. San Juan's sewage gets only primary treatment by overloaded equipment. Slum-banked Martin Peña Channel is but an open sewer feeding heavy doses of raw waste into San Juan Harbor for nature's tide and sunshine treatment. Its consultants have done a study of the sewage disposal problem for Aqueduct and Sewer Authority, but that agency is at present too busy financing and completing the major Loiza water supply project to be ready for an island-wide sewerage program. It will come, but later.

• **Out of the slums**—Raised living standards, higher incomes, will mean social progress, better housing. Postwar leaps and bounds have put the island way ahead of where it was, but urban slums and rural shacks still house a deplorably large portion of the population. Both public (Puerto Rico Housing Authority) and private (mostly L. D. Long) efforts are straining to eliminate the slum condition. Rodent-ridden shantytowns still form big, ugly portions of San Juan, despite

"close integration of projects . . . will make it possible"

. . . . Point 4

the fact that over 40,000 persons have moved into sprawling Puerto Nuevo alone.

It will take many more acres of suburban, concrete-block communities to clean up the urban housing situation. And in rural sections—lacking the mass-production opportunity so attractive to private builders—the problem of supplying homes at rock-bottom cost is even tougher. A scheme for supplying land, materials, and a concrete-block machine is working to help the impoverished country folk to build $300 three-room concrete-block houses to replace their present wood-and-sheet-metal shelters. Government support, $20 down, and their neighbor's volunteered labor have so far put the first few families in new homes under this low-low-cost housing plan.

At the upper end of the housing scale are the island's fanciest structures now under way—four multi-story concrete-framed apartment buildings, complete with air-conditioning, pent houses, garages, dining rooms and even night clubs. These are going up with an eye to attracting tourists—a strong desire of the island's economic developers.

• **Concrete**—Virtually all new housing (and commercial building) is concrete—either poured or block. In many cases it's poor-looking stuff—chuted, honeycombed, uncured, cast in rough form lumber. But the climate is kind, and Puerto Ricans seem to be masters at the use of stucco, turning out finished products with smooth, if often severely ultra-modern, lines.

The island produces some 2,000,000 bbl of cement a year—enough to export about ¼ of production even in these days of building boom at home. The industrially powerful Ferre family in Ponce, on the south shore, has perhaps the beginning of the island's merchant marine in its ships now carrying their cement to South American markets. Locally, the native product sells for about 90 cents per bag in bulk. Reinforcing steel used on the island now comes largely from European sources. Structural steel, in general, finds it hard to compete; humidity, small temperature range, availability of cement, all favor concrete.

• **For future air traffic**—Biggest island transportation project under way is construction of Puerto Rico International Airport—a pair of 7,800-ft runways some six miles from downtown San Juan—to replace a short and settling mid-city strip now leased from the Navy. A subsequent issue will carry a description of the new air terminal.

POWER—for industry is greatly increased as units of San Juan steam plant go on the line.

WATER—for San Juan in abundant supply gets proper treatment in new filtration plant.

Island highways are slowly but surely improving under a $30,000,000 road program of the insular Interior Department. But flying is still the best way to get about the island—and probably always will be due to the rugged inland mountain range that divides the island, North from South, with tall, rugged peaks ranging to near 4,000 ft.

Insular Interior Department's largest current project is an 800-bed addition to the TB hospital at Rio Piedras, now nearing completion. This job was the largest single contract ever let by the insular government—$4,059,000.

HOUSING—in rural areas is toughest of all. The mass-production opportunity is missing there.

• **Coordination's the key**—These activities of public and private construction agencies are the island's major projects—not an all-inclusive list but an indication of the quantity of work under way. More impressive than any figures for quantity is the quality of coordination permeating the whole construction program. All engineering effort seems aimed at the common target—economic development.

Barring some lucky though not at all impossible windfall, like a process for making plastics out of bagasse (the crushed, juiceless sugarcane waste now burned by the mills as fuel) or the discovery of rich off-shore oil deposits, Puerto Rico can expect no easy way out of its present economy plight. Success in its drive toward a stable economy through industrialization—the hard way out—will be largely attributable, if achieved, to the energetic self-help attitude of its Puerto Rican instigators.

ROADS—to speed goods and services are needed by new industry; this is the San Juan to Caguas highway.

How to get low-cost building walls

- **Develop practical metal-skin or prefab spandrel walls**
- **Encourage standardization of curtain-wall elements**
- **Work out assembly and erection procedures in advance**

BUILDING DESIGNERS interested in developing lower-cost building walls will find valuable suggestions in a paper, "Non-Load-Bearing Walls from a Building Contractor's Point of View," by J. P. H. Perry, consultant, Turner Construction Co.

Part of the Building Research Advisory Board's November conference on building walls, this paper will be included in the proceedings of the conference, which will be published in the near future.

Great encouragement, Mr. Perry says, should be given designers and manufacturers in their efforts to work out a practical metal skin or prefabricated spandrel wall for buildings. Advantages to be gained include: Savings in floor space, cost economies, substantial reduction in weight, and savings in construction time. Considering the average 25-story building, which takes 16 months from possession of site to occupancy, Mr. Perry estimates that there might be as much as a month's saving with a successful metal-skin design.

At present, however, Mr. Perry believes, no metal-skin type of spandrel wall is available for office buildings that can compete successfully with conventional masonry walls. To make his point, he quoted cost data collected by C. F. Rosenburgh, chief estimating engineer of Turner Construction Co.

• **What walls cost**—A typical wall panel in the Sinclair Oil Building in New York City (ENR Dec 28, 1950, p 20), except that sash is assumed to be double-hung aluminum, cost $9.87 per sq ft. Architect's fees are not included. The cost covers 4-in. limestone facing, 8-in. brick backup, structural steel, scaffolding, dampproofing, spandrel waterproofing, caulking, spandrel fireproofing, sash three windows wide, glass and glazing, metal-lath furring, three coats of plaster, painting, asphalt tile base, air-conditioning enclosures and venetian blinds.

With 4-in. face brick substituted for limestone (similar to construction being used for the 32-story Chrysler Building East, in New York City), the panel would cost $8.75 per sq ft.

With 4-in. face brick and cast aluminum spandrels (similar to construction used for the Mutual Life Insurance Co. Building in New York City), the wall would cost $10.14 per sq ft.

• **What they might cost**—If, instead, the wall were built of prefabricated metal panels five sash wide, with 2 in. of rock wool and 1-in. plasterboard for insulation, and with a continuous metal air-conditioning enclosure, the cost would be $10.30 per sq ft. These metal panels would have an exterior facing of 20-ga stainless steel with dull-satin finish and an interior facing of 18-ga fluted steel. Double-hung aluminum sash would be used between columns. Piers would be faced with metal panels. Since this cost is based on vendors' quotations and estimates of erection costs, it may differ from actual cost by as much as 20%.

Similarly, the cost of the facade for the new office building of Lever Brothers in New York City is estimated at $10.62 per sq ft. Like the east and west elevations of the United Nations' Secretariat (ENR Dec 29, 1949, p 20), this wall is essentially all glass, but has stainless steel frames and trim. Backup is masonry and air-conditioning enclosures are metal. Spandrel walls are low in height.

In contrast, total cost of the cellular, insulated metal wall of the Wilgoos Laboratory of the Pratt & Whitney Aircraft Corp. at East Hartford, Conn., is estimated at $5.02 per sq ft. In the main part of this building, the wall is 40 ft high and 20 in. thick, including a 12-in. air space.

• **How to cut costs**—The smaller cost of walls for industrial buildings may be attributed mainly to standardization, Mr. Perry believes. Standard panels produced in great quantity can be sold at a much lower price than a panel designed especially by an architect to fit a particular facade for a monumental office building.

Mr. Perry offers the following suggestions as a guide in the development of better prefabricated units:

1. The designer should keep in mind that these assemblies have to be applied to a structural frame that is to a certain extent rough work. Whether of fireproofed structural steel or reinforced concrete, frame dimensions do not always conform exactly with dimensions shown on the plans. A 40-story frame may vary from true planes by as much as plus or minus 1¼ in. Therefore, the design of prefabricated units must include allowances for variation in position of members to which they are to be attached.

2. Consideration should be given to movements in the structure after it is completed. These may be due to temperature change, wind pressure or shrinkage of the structure. Success of the design hinges on the details of the joints.

3. Assembly, connections and erection procedure should be carefully worked out in advance. The design should be such that general contractors can compute cost of installation accurately.

4. And finally, consideration should be given to the viewpoint of labor unions, since jurisdictional disputes might occur in erection that would delay construction of the building. Before prefabricated units are placed on the market, the design and proposed erection methods should be discussed with unions that might in any way conceivable be interested in the units.

Contact nation to be aided if you want ECA business

If an engineering firm wants foreign business under the Economic Cooperation Administration, it must contact the nation that is being helped, not ECA.

That is the word from George H. Knutson, executive chairman of the Projects Committee of ECA's Industry Division.

Knutson says that leads on ECA business can be obtained through: (1) Direct contact with the "member" nation; (2) an agent in that nation; (3) a U. S. manufacturer who has sold the member nation on using his equipment; or (4) technical assistants, who are attached to most embassies in Washington.

In practice, a qualified engineering firm obtains a conditional contract with the nation—which goes into effect when money for the work is approved by ECA.

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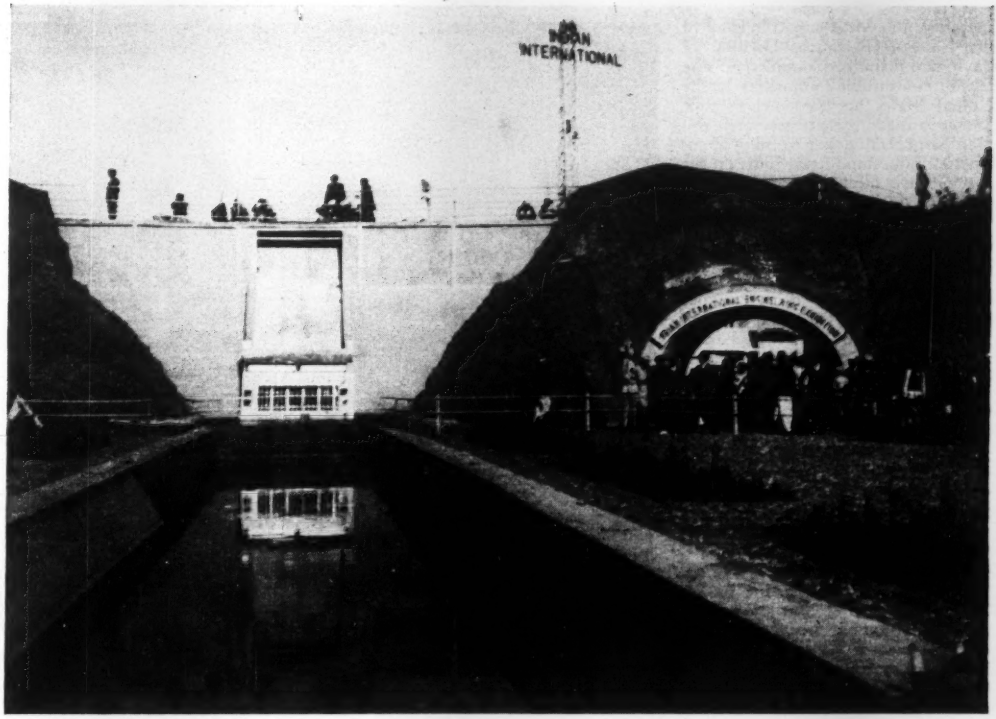


AN ELABORATE EXPOSITION made up largely of working models of power and irrigation project was set up near New Delhi.

Letter from India: Progress (western style) beckons

Waldo G. Bowman
Editor

NEW DELHI, INDIA, JAN. 16—Prime Minister Nehru, away in London, attending the conference of prime ministers of the nine British Commonwealth countries, is missing a good show in this, his own home town. In fact, unless he returns soon he will fail to witness an event—and his countrymen's reaction to it—that may hold far more significance for India's future than any appeasement policy toward Communist China that he may be able to work out in London.

The event is the Indian International Engineering Exhibition—a vast, colorful and educational world's fair, the like of which the East has never seen, much less conceived and managed itself. Although an appendage to the international engineering meetings, centering on hydraulics and river development being held in New Delhi concurrently, the exposition is the more important. It reaches down to the people, giving them a glimpse—through exhibits of low-cost house, of machinery for industry, for construction and for household uses and by models of dams, power plants, irrigation canals and efficient farms—of the shape of things as they may and can be.

The man in the street—and his ragged family—crowd the mile or more of exposition streets throughout the afternoon and evening proving by the looks on their faces—and their disregard of the ferris wheel and the games of chance in the amusement area—that these construction works and machines that promise a higher standard of living are what they hope to gain from their new-found freedom in a country of their own.

Without doubt the same thoughts are in the minds of the several hundred Indian engineers attending the meetings of the World Power Conference, the International Commission on Large Dams, the International Commission on Irrigation and Canals and the flood control conference of the UN's Economic Commission for Asia and the Far East. But these men are of the minuscule minority of educated people among India's millions who know what modern living, Western style, means. They could be expected to welcome and work for more of it. Theirs is the well-established task of engineers everywhere to provide the facilities that will bring to India the higher standards of living—more food, better sanitation and health, less drudgery in jobs and a few luxuries—that its common people are only now beginning to dream about.

That they take this task seriously is evident from the elaborate care with which the Indian arrangements committee, from its chairman, A. N. Khosla, on down, has planned the conferences for the education and comfort of their foreign guests. It is also evident in the grueling work that N. D. Gulhati and his entertainment committee do day and night. Mr. Khosla is president of the Central Board of

Irrigation and Mr. Gulhati is chief of the National Resources Division of the Indian Planning Commission. The jobs of convention committees in the United States are extremely simple in comparison to what these men and their helpers are doing to bring about a better understanding of India on the part of their foreign guests.

• **The exposition**—It is in the exposition that the fruits of what the technical conferences promise is made plain. The nature of the show is announced to the visitor by the entrance which consists of two 30-ft artificial mountains pierced by tunnels and flanking a concrete overflow dam complete with running water and a downstream power plant and stilling basin. Inside, and occupying a central plaza is a 300-ft square relief model map of India (scale 1 in. = 1 mile) on which are spotted all existing and proposed river development schemes. In the snow-capped Himalayas, Mt. Everest rises to a height of 6 ft, and water runs down the rivers to the sea.

Around this focal exhibit and extending for several blocks are the exhibits of the states of India and of 20 foreign countries, including the U. S., Western Germany and Yugoslavia, but not Russia. France, with two large buildings—one depicting its hydro projects and the other its industrial products—makes the best and largest presentation. This is not just an educational exposition. It is equally a trade fair, and the industrial countries of Europe are here to offer their wares when and if India can buy.

Nor have the industrial concerns of India nor the Indian selling agents for foreign equipment failed to sense the opportunity. More numerous than the government exhibits, and in many cases larger than any except France, these industrial shows enable the visitor to examine what Switzerland, Italy, Sweden and the U. S. A. have to offer from agricultural equipment to turbines.

The entire exposition, which will be open for 2 months, covers about 33 acres, and 6 acres are under roof. Built on a plot of open ground about midway between Old and New Delhi, it attracts the passers-by from both and is especially noticeable at night when its blazing floodlights and electric signs on high towers provide a striking contrast to the relative gloom which the normal illumination of the neighboring cities cannot dispel. In this aspect, too, the exposition heralds the hopes that India is placing in its hydro schemes and future development generally.

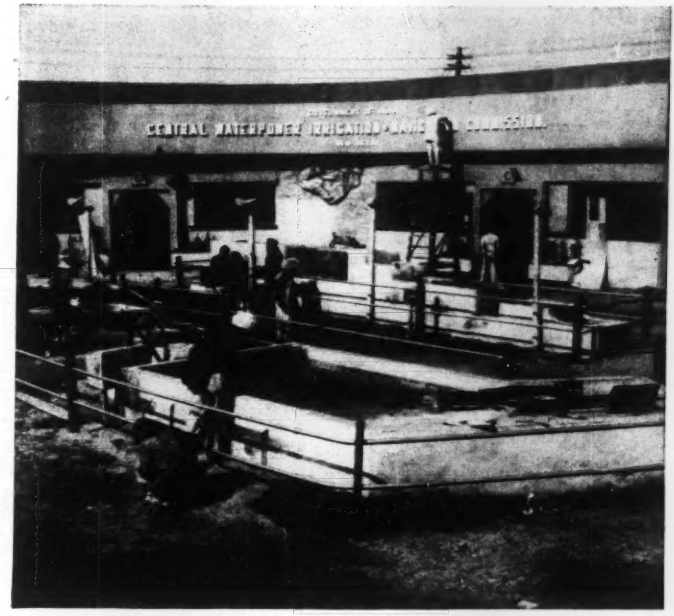
• **The technical conferences**—That these were international conferences in the true postwar manner was clearly evident at the very beginning when the flood-control meetings of the UN's Economic Council for Asia and the Far East opened.

PART OF THE LARGE RELIEF MAP of India built to show great river projects proposed. In the left foreground is the Damoder River, development of which has started.

• **Russia objects**—General agreement among the delegates had settled upon an Indian for chairman and when an Indian delegate nominated Gail Hathaway, chairman of the U. S. delegation for the vice chairman, he was immediately followed by a Russian delegate who read a prepared statement nominating a member from Pakistan as the vice chairman. Quickly sensing the intended obstructionism and the hoped-for opportunity for propaganda debate, a French delegate proposed that two vice chairmen be elected. This was agreed to, so that a vote was avoided to the chagrin of many present, but no doubt in keeping with the amity that should prevail at engineering meetings. The Russian next expressed regret that no representatives of Communist China or North Korea were present, although it was plain they were not eligible.

It is significant in view of this propaganda that none of the more than 200 technical papers submitted to the various conferences was by a Russian; that in only a few instances did discussions by the Russians contain other than political ideas and technical generalities; that one such discussion carefully prepared in advance was presented in each session; and that two non-engineer members of the Russian delegation were always present with what seemed the obvious intent of keeping the Russian engineers from making any off-the-cuff remarks, which, as engineers and not as propagandists, they might feel were appropriate. A typical example of what the Russians did consider appropriate was the statement in one of their World Power Conference discussions that in Russia one need not bother with whether a project is economically sound or not; if the people need it, it is built.

Even with this warning the honest—but naive—character of technical men was revealed when the delegates voted to appoint a Russian to head the committee that would draft the final report of the flood-control conference. The hope was that as chairman he would feel impelled to be more modest and considerate in forcing the inclusion of propaganda in what should be a straight technical report. The hope was not realized—as anyone who has followed the Lake Success UN meetings could have foretold—but despite this shortcoming the report contains numerous fundamental suggestions that should be helpful to flood-control engineers in Asiatic countries. One that was agreed to by the Russians, but will probably not



MODEL OF MADRAS HARBOR installed by the Central Waterpower, Irrigation & Navigation Commission is complete with a wave-making mechanism.

be followed by them, urged international cooperation in the exchange of hydrological and meteorological information.

The value of such meetings as these of the World Power Conference and of the conferences on large dams and on irrigation—other than to those present—rests in the published proceedings that include the original papers. No abstract that could be made here would be either fair or very useful. It is, however, appropriate to report the subjects that each conference considered.

The World Power Conference sessions were concerned with (1) the utilization of electricity in agriculture and (2) the coordination of development of industries with the development of power resources. A total of 38 papers was submitted. As is the practice at all these conferences, none of the papers was presented, but instead a general report on all of them was prepared and read by a designated delegate. The balance of each session was devoted to discussions by the delegates of any of the questions raised by the papers. The scope of the Power Conference discussions on utilization of electricity ranged from cottage industries to heavy industry and from agriculture to railways.

This was the inaugural meeting of the International Commission on Irrigation and Canals, and the program was very general in character, the 22 papers being focused on (1) a review of irrigation practice in various countries and (2) present-day problems in irrigation and drainage. It was reported that 18 countries had expressed an intention to be members of the commission, and that national committees had already been formed in a few. A. N. Koshla of India was elected president together with 3 vice presidents—Hamid Bey Suleiman of Egypt, Prof. S. H. A. Begemann of The Netherlands and Prof. Georges Drouhin of Algeria.

The Conference on Large Dams, the fourth to be held in the past seventeen years, was the largest and most productive of the New Delhi meetings. A total of 111 papers was submitted on four general subjects: (1) design and construction of earth dams and rockfill dams; (2) determination of maximum flood discharge and the design of spillways and outlets to take care of it; (3) concrete for large dams; and (4) sedimentation in reservoirs. Discussors emphasized the growing importance of rockfill dams, questioned the efficacy of rigid concrete core walls in earth dams and of sheetpile cutoffs in large dams of this type; urged that impervious upstream blankets be proportioned principally with regard to the amount that they increase the length of the path of seepage; and recommended that the exit gradient of seepage be controlled by relief wells or wellpoints. One discussor reported the successful use of welding generator electrodes to stabilize quicksand in Australia and another described a small rockfill dam in Sweden in which layers 2 to 3-ft thick had been first compacted with a steam roller and then subjected to vibration, which reduced the void volume from 50% down to 30%.

• **Active U. S. participation**—Americans submitted a total of 16 papers to the dam conference, and took an active part in the discussion of all of the program subjects. The members of this State-Department-designated delegation are Gail A. Hathaway of the Corps of Engineers, chairman; Clarence E. Blee, chief engineer, TVA; Francis L. Adams, assistant chief, bureau of power, Federal Power Commission; Leslie N. McClellan, chief engineer and Michael W. Straus, commissioner, Bureau of Reclamation; Preston T. Bennett (Omaha), Robert J. Pafford (Omaha), Louis E. Rydell (Walla Walla); Jacob H. Douma (Washington) and William C. Cassidy (San Francisco), all from the Corps of Engineers; Francis S. Friel, consulting engineer, Philadelphia; Claude R. Wickard, administrator, Rural Electrification Administration; and the writer.

Other Americans at the conference include: G. J. Gavin, chief engineer for Morrison-Knudsen on a dam in Ceylon; L. F. Harza, consulting engineer, Chicago, who is also chairman of the consulting board for India's Damodar Valley power and flood control project, and L. Gray Marshall of the World Bank which has loaned India $62,500,000 to cover locomotive purchases in the U. S., a steam power plant in the Damodar Valley and a project for clearing a large area of a deep rooted grass that has taken over the land.

Of the 770 persons (340 from foreign countries) who registered for the conferences, 280 elected to take a two-week's post-convention study tour of India's river development schemes. Home Minister Rajagopalachari had said in a delightful welcoming address to the delegates that "there have been many plans and projects approved by India's engineers which, in the matter of costs, have run into figures that baffled the country's Finance Ministry. Some have been taken up, but some have been left unwillingly in suspension waiting for better days." The touring engineers—themselves somewhat baffled in determining which projects were actually under way and which merely proposals—were now to see how some of the projects that the Finance Ministry had felt it could pay for were faring.

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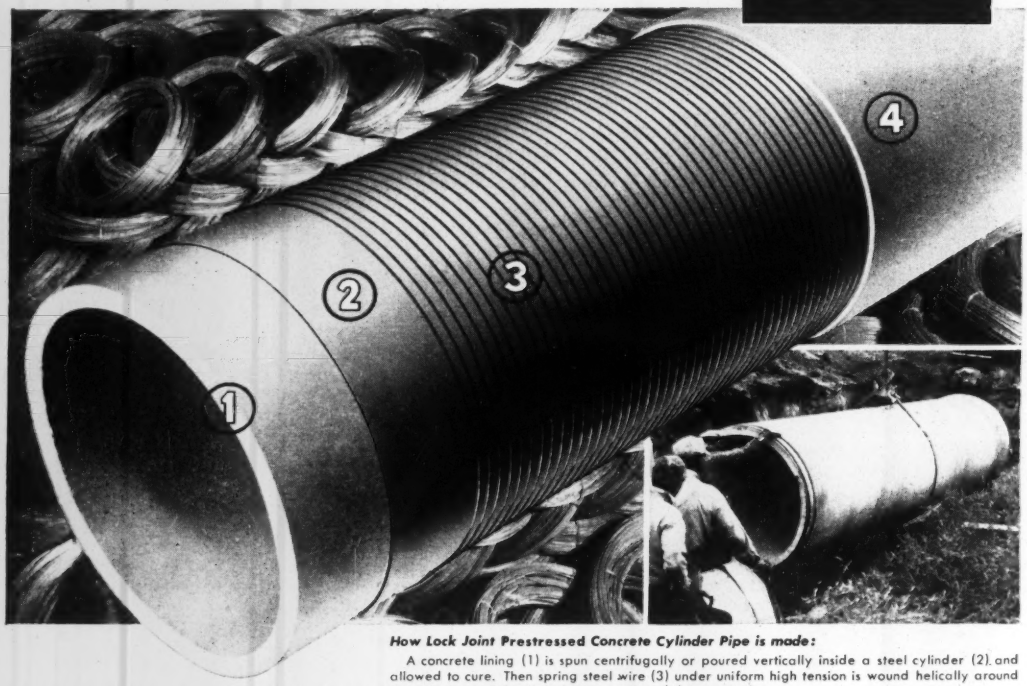

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DOWNTOWN SEATTLE (center foreground) will be bypassed by a waterfront viaduct (lower right). Thus, through traffic between the north side (predominately residential) and the industrial south side (upper right) will no longer be subject to business district traffic delays. Viaduct will follow Alaskan Way, broad waterfront thoroughfare.

Build double-deck concrete viaduct to bypass downtown Seattle

NOW UNDER CONSTRUCTION is a 2-mile expressway system to carry through traffic past congested downtown Seattle. The greater part of this $10,000,000 traffic bypass is to be a double-deck, reinforced-concrete viaduct on Alaskan Way—principal water front thoroughfare.

The physical layout of Seattle has contributed greatly to traffic congestion: The city is located between Puget Sound, on the west, and Lake Washington on the east, with the business and commercial section at the narrow part of the city's hourglass shape. Two-thirds of the city's population resides north of this narrow neck and the greater part of the industrial area is south. People going to and from work through the central portion add to the normal traffic flow.

Further complicating the situation is the terrain that slopes upward steeply from the waterfront through the most heavily congested area of the city. This restricts the layout of through traffic routes.

The existing routes have suffered the same growing-pains that have plagued all of the west coast. Traffic over them has increased 74% from 1939 to 1949.

Origin and destination surveys made in 1947 showed a weekday total of 47,700 through vehicles, including 5,520 trucks. Engineers believed this to be substantial enough to justify an express route. (They estimate the new viaduct will carry 59,000 vehicles a day.)

• **Advantages**—Advantages of an Alaskan Way location are many and include: The right-of-way is broad (180 ft wide)—it now carries six lanes of auto traffic, two rail lines, and a service and loading street; the street is at water level and thus has no great variations in vertical alignment; the route is close to the downtown area but does not bisect it.

There is little interference with existing facilities. The viaduct structure is being built on the east side of the street over the rail lines and service streets. Thus, it will not interfere with the existing roadway on the west side that now serves the dock area and as a semi-express route for through traffic.

• **Two-miles long**—The current construction program will provide an expressway 2 miles long, about 1¼ miles of this being double-deck viaduct. This takes the traffic from the start of the project, just south of the heart of the city, past the densest part of downtown Seattle. Then, through a transition section, the viaduct changes to a single-deck, six-lane-wide elevated structure. Completing the 2-mile expressway will be a 3,000 ft section that includes a four-lane depressed roadway. This latter connects the waterfront viaduct with Aurora Ave., a semi-express main route to the north.

Each deck of the viaduct provides a 40-ft clear width for traffic. This permits three lanes in each direction.

BEFORE—Alaskan Way, a busy commercial street, serves Seattle's mid-town waterfront. Docks and freight spurs now compound the traffic confusion.

AFTER—Through traffic will ride this double-deck viaduct. Telephone and electric service will be supported on the new structure.

The lower deck will be used for southbound traffic and the upper for northbound.

At present, no access ramps are provided throughout the length of the double-deck section. However, it is anticipated that at some future date the viaduct will be extended to the south. Then it will be desirable to have direct access to the heart of the city from the viaduct.

• **Access provisions**—When such access is necessary (even if at an earlier date), it can be provided since extra width is being built into the structure at strategic locations. This extra width (52-ft total width) allows room for acceleration and deceleration channels at future downtown ramps. Those future works would be a northbound "off" ramp at Seneca St. and "on" ramp at University St.; and a southbound "off" ramp at Spring St. and "on" ramp at Columbia St.

The project has been planned so that the expressway can be used as soon as the viaduct portion of the project is completed. Should conditions prevent completion of the depressed roadway in Battery St. from the north end of the viaduct to U. S. 99 (Aurora Ave.) there will still be access over the existing streets.

This north end portion will be built in excavation and covered over so the street will still be usable for local service functions. Thus, in effect, the depressed roadway will be a tunnel and will have the accompanying lighting and ventilation problems.

Tunnel width is sufficient for four lanes only since that's as wide as the existing street will allow. Sufficient ramps are to be built in the transition between the four-lane tunnel and six-lane viaduct so each can be used to capacity without overcrowding.

Another feature of the program is that electric and telephone wires now strung on poles along Alaskan Way will be suspended on the underside of the viaduct in enclosed conduits. This work is all to be done by the particular utilities involved, at their own expense. The city can require them to do that under the terms of franchise agreements.

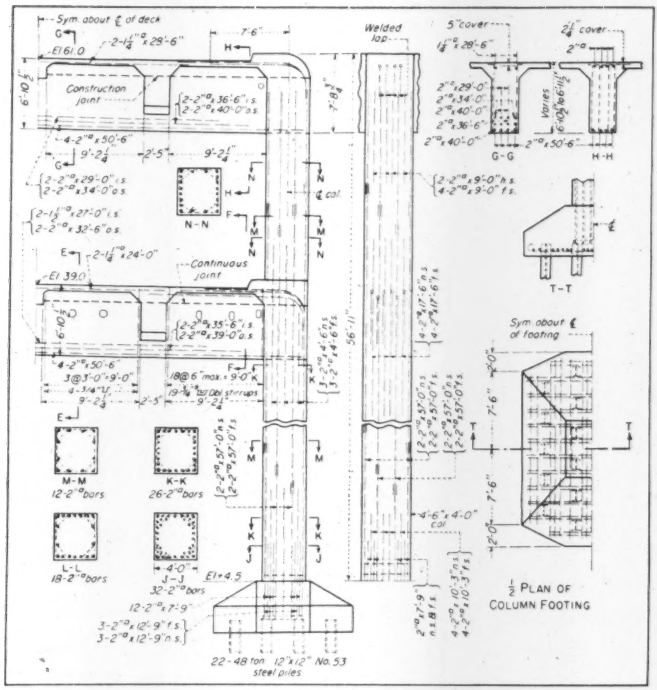
• **Heavy reinforcing bars**—Except for a brief portion spanning a main-line railroad right-of-way, the entire viaduct structure will be reinforced concrete. Originally, it was planned to use structural steel, but reasons of economy and probable delays involved in such extensive structural steelwork dictated the change.

The height and width of the structure called for designs that included 2-in. square reinforcing bars to provide the necessary tension-resisting elements in the columns and beams.

The viaduct is made up of rigid frames in three-span units having span lengths of 68½ ft, 85 ft and 68½ ft. Each three-span unit includes two intermediate bents and two end bents. These latter bents are just a little over one-half column in width. An open joint, 1½ in. wide, separates adjacent end-bents.

To provide a clear roadway, columns are placed on the outside. Thus, long spans are involved in the major girders supporting each deck. This creates design problems that make heavy reinforcing necessary.

For the 40-ft roadway width, the main girders span 47 ft center to center of columns. The design calls for such girders at an intermediate bent to be almost 7 ft deep by 2½ ft wide. This allows room for three layers of reinforcing bars with four 2-in. square bars in each layer. Reinforcing at the base of the 4x4½-ft columns supporting such intermediate



LONG SPANS necessitated by the placing of columns outside of the roadway led to the extensive use of 2-in. square bars. Such reinforcement was used in both columns and beams as shown by the detail of a typical intermediate bent.

bents includes thirty-eight 2-in. square bars.

Where the roadway widens for access ramps, the reinforcing is even heavier.

Use of these large bar sections provides sufficient steel area to develop tension. Besides that, ample space between the bars is available so the concrete can be worked around the bars.

Of course, procurement of such bars is by special mill order. However, the engineers believe that procurement will be simpler than procurement of steel sections for an all-steel viaduct.

WHAT IT COSTS AND WHERE THE MONEY CAME FROM

	Alaskan Way Viaduct	Battery St. Subway
Cost		
Preliminary eng. and design	$ 250,000	$ 50,000
Right-of-way	767,500	359,300
Construction	7,020,200	2,200,000
Total	$8,037,700	$2,609,300
Source of funds		
Federal aid	$3,760,000	$1,180,000
State (motor vehicle fund)		907,000
City of Seattle	4,277,700	522,300
Total	$8,037,700	$2,609,300

Note: City of Seattle pays for all right-of-way and preliminary engineering and design shown above. Source of city funds are:

State Development Board (not gas tax)	$1,945,000
Cumulative reserve (gas tax)	2,855,000
	$4,800,000

• **Construction schedule**—The project is divided into five separate major contracts. One of these will be the north end Battery St. subway portion. This is scheduled to be advertised late in 1951.

Three contracts are involved on the viaduct structure. One of these was awarded early in 1950, bids on the second were taken in January 1951 and the third will be bid later in 1951.

A fifth contract will subsequently be let for all electrical work.

Completion of the entire work is now scheduled for late 1952 or early 1953, although uncertain conditions may delay that schedule.

Right-of-way acquisition is of course a major expense—running more than $1,000,000 to date. Much of this right-of-way was acquired through condemnation proceedings. Included in these suits were questions unusual to Seattle and the Pacific Northwest. Since the viaduct extends 60 ft above ground, the condemnation verdicts had to determine the effect and value of impairment of "light, air, and access" to buildings along the waterfront route.

The project is being financed jointly by city, state, and federal funds as detailed on an accompanying table.

Almost all of the design work has been done by the city of Seattle forces under the direction of R. W. Finke, city engineer. R. M. Murray served as design consultant and H. W. Tyler heads the city's design division.

All city designs are approved by the state since state money is involved. Further the state highway department is doing the actual construction work. W. A. Bugge is director of the Washington Highway Department. Construction is under the direction of E. C. Simpson. George Stevens is state bridge engineer and is in charge of checking the design.

Turnouts cut road hazard

One dangerous traffic hazard on Florida primary highways will be eliminated soon. The state road board has approved a request to include in its 1951 budget funds to provide paved "turn-outs" for rural mail carriers. Mail boxes are to be located in clusters for each neighborhood and will face away from the highway. The carriers will turn off the highway and service the boxes on the driver's side of the car. The new plan was advocated by safety committees, rural mail carriers and highway beautification groups. Florida has 340 rural mail carriers who travel 18,000 miles daily to service 370,658 mail boxes.

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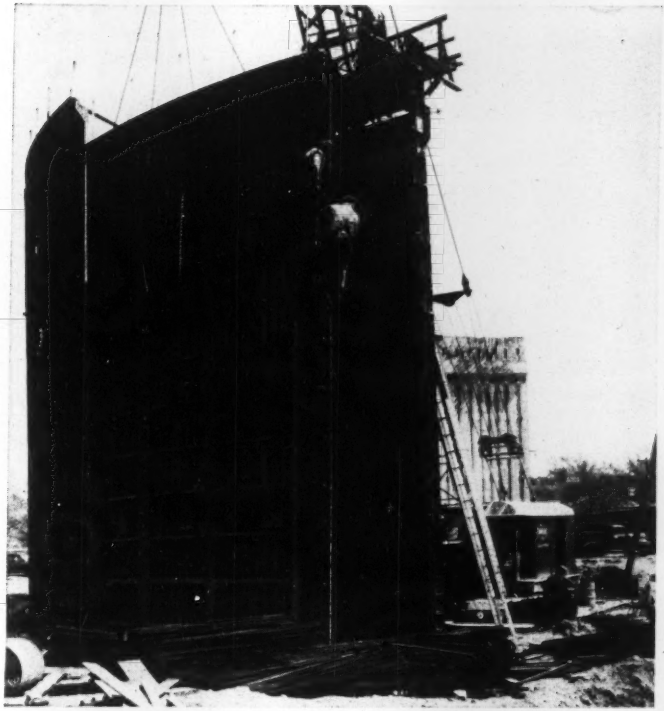


OUTSIDE FORM PANEL for a 37-ft high tank is lifted into place by crane. Four-line bridle hoists panel by links located on vertical strongbacks at their balance points.

Forms for big digester tanks easy to handle, rigid in use

BIG—but easily handled—steel forms were used in pouring the eight 36-ft 9-in. high circular sludge digester tanks at New York City's 160-mgd Owl's Head (Brooklyn) sewage treatment plant (ENR Sept 28, p 44). The 103-ft 4-in. dia digesters were poured in four months and are to be the city's first major prestressed concrete structures. The stressing operation is now nearing completion.

• **Form details**—Tanks were poured to full height in 67½-deg segments, each some 60 ft long and requiring about 90 cu yd of concrete.

Wall forms were assembled in 22½-deg panels, which, with their structural steel framing, weighed 11 tons apiece. A 45-ton crane with 100-ft boom easily lifted these members into positions on the previously poured tank foundation slabs.

Six form panels were furnished—enough for two 67½-deg segment of tank. While one 67½-deg portion was being poured, forms were being erected for the next. Each of the six panels got an average of 21 uses in casting the eight tanks.

Panels consisted of bolted-together 8-in. channel sections backed by structural steel, braced to preserve correct curvature and alignment. Inside panels had their curvature braced with chord struts; their alignment was maintained by adjustable, built-in outriggers (three per panel) anchored to pre-located bolts in the tank floor. Outside forms were tied to the inside panels with 12,000-lb form ties. Retention of alignment was cited by contractor personnel on the job as an outstanding feature of the form.

• **Concrete placing**—Concrete was poured through 2x2 ft removable panels spaced on 8-ft centers both ways on the outside forms. The same crane that set the formwork hoisted concrete in a 2-cu yd bucket. Five hoppers were fixed at top of form for each pour, and elephant trunks led down from these to the removable panel in the outside forms. A single pour was completed in 4 to 4½ hours. Concrete was internally vibrated.

Steel scaffold brackets on the forms carried catwalks; aluminum ladders and swinging scaffolds were also used in placing reinforcing and form ties.

Concrete was trucked to the job, mixed in a 1:2.2:4 ratio for 3,500-psi compressive strength.

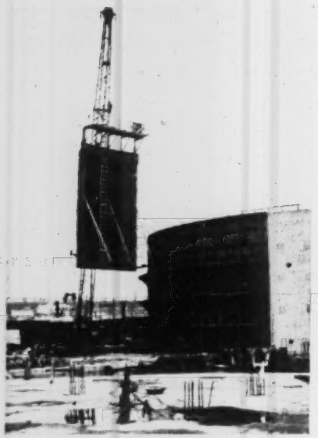
The form crew required was one foreman and 12 carpenters; one foreman and six men poured the concrete.

• **Prestressing**—Recesses in the tanks' inside surfaces for vertical prestressing wires were formed with ribs permanently secured to the surfaces of the inside panels at 1-ft 2-in. to 2-ft centers. Two inside panels were designed with movable ribs for use where vertical prestressing might interfere with pipe sleeves or other openings in tank walls. Provision was made at tops and bottoms of forms for supporting anchorages, cast into the concrete for the prestressed wires.

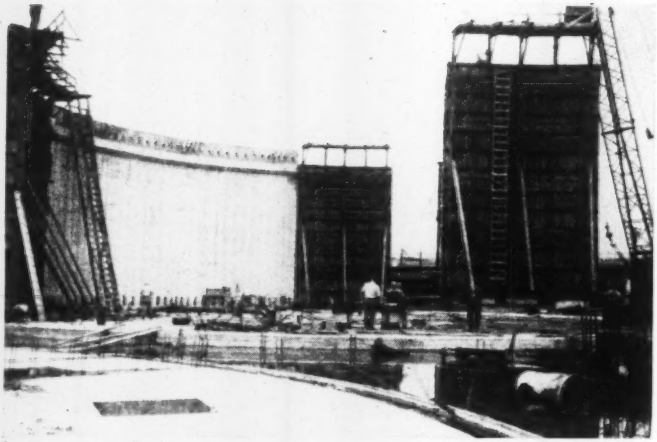
Vertical prestress wires are 0.196-in. dia and are placed in groups of four. Groups are spaced 2 ft on centers around the inside circumference of the tanks. Horizontal wires—0.162 in. dia—are wrapped around tank walls with their spacing varying with height. At bottom of wall there are 66 wrappings per foot; this diminished to 38 per foot at the top. (The method of prestressing concrete tanks with high stress wire was first described in ENR Dec. 30, 1943, p. 51.)

• **Plant and process**—The $21,000,000 plant, when completed in 1951, is to treat sewage from a contributing population of 1,200,000, estimated for 1970. The drainage area is a 12,281-acre portion of Brooklyn that fronts on upper New York Bay and the Narrows from Gowanus Canal to Coney Island Creek. At present, flow estimated at 120 mgd is dumped into the harbor at six points as raw sewage.

Owls Head has the distinction, according to its designers, of being the first plant planned to function exclusively as a high-rate activated sludge process. Other distinctive features: Aeration and settling tanks will be enclosed and ventilated, with ozonation of exhaust air to deodorize it. Air diffuser tubes in the aeration tanks will be retractable for easy cleaning, repair and replacement. Sludge digestion tanks will be sealed, and gas will be stored in a separate tank for use in power generation and heating. Sew-



INSIDE PANEL is hoisted high over wall as it is removed from tank interior.



OUTRIGGERS on inside panels give forms rigid alignment. Bracing preserves their proper curvature. Outside forms are tied to the inside panels.

age entering the plant will be metered by a large Parshall flume. Sludge and grit will be disposed of at sea by a 283-ft vessel being built for $1,128,800—part of the project cost.

• **Personnel**—Digestor tanks (and all other major structures for the plant) are being built by Thompson-Starrett Co. Inc., of New York, under direction of Henry A. Buschen, vice-president. Walter E. Shull is the contractor's general superintendent, and Leo Magid is project engineer for the New York City Department of Public Works. Forms were designed and furnished by Irvington Form & Tank Corp., New York, represented on this project by Raymond Pennotti. The Preload Corp., of New York, is doing the prestressing.

Notes on legal decisions

Summaries of decisions relating to construction work prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phases of Construction Contracts (McGraw-Hill Book Co.)

Subcontractor's negligence

A general contractor is not responsible for the independent negligent acts of his subcontractor. The fact that the general contractor retains the power of general supervision to see that the overall work proceeds properly and to coordinate the actions of several subcontractors on the site of the work will not ordinarily make him liable for the negligent acts of any of his subcontractors. Nor is the general contractor obliged to protect employees of his subcontractors against the negligence of their employer or that of a fellow employee.

These common law rules, as is often the case, yield to situations where liability is imposed by local statutes. For example, Section 240 of the New York Labor Law imposes an obligation to furnish proper protection to persons working on scaffolds, hoists, ladders and other specified devices.

The general contractor may also become liable when by his act or conduct he assumes control and gives specific instructions that necessarily involve the safety of a subcontractor's employees.[1]

(1) Broderick v. Cauldwell-Wingate Co., 301 N.Y. 158, 93 N.E. 2d 631 (New York Court of Appeals, July 11, 1950.)

Acceptance of poor work

An action was brought for the specific performance of a contract for the construction and sale of a house.[1] After the purchaser had taken possession of the house, the floors started to sag and other defects developed and an action was brought to recover damages resulting from defective construction. The seller contended that the acceptance of the deed for the property constituted a waiver of the alleged defects.

The court found for the buyer, and since the most serious defect was the sagging floors, which resulted from the use of green timber, and as it appeared unlikely that the defective floors would be taken up, the purchaser was allowed as damages the difference in the value of the house if the flooring had been built in conformance with the plans and specifications and its value with the improper flooring.

As to the contention of the seller that the acceptance of the house constituted a waiver of defects, the court indicated in its opinion that while as a general rule the acceptance of a deed affects a merger of all prior negotiations and agreements, this principle does not apply where there is a collateral agreement, as is the situation in this case, that the house will be delivered complete in accordance with certain plans and specifications, which collateral agreement is in no way inconsistent with the provisions of the deed.

The mere fact that the owner takes possession of a building after it is erected does not in itself constitute a waiver of defects or an acceptance of the contractor's workmanship. However, acceptance may bar a recovery for known or discernable defects or for such defects as should have been known to the owner at the time he took possession of the house. A failure to protest or make a complaint within a reasonable time after the defects are discovered may be construed as a waiver of the alleged defects. In order to protect his rights, the buyer should promptly notify the other party of any defects in the work.

(1) Laurel Realty Co. v Himelfarb, 72 A.2d 23, Court of Appeals of Maryland, March 10, 1950.

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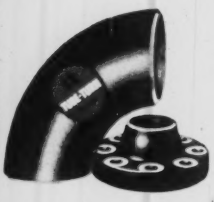
Wrought iron downspout welded on Cleveland Bridge

Cleveland's Abbey Avenue Bridge is big enough to collect a lot of water in a rainstorm. To get rid of it, nine downspouts, ranging from 39 to 66 feet in height, carry the water to underground sewers. Wrought iron pipe was chosen for its resistance to rust. All-welded piping was chosen for long life, structural rigidity. Weak joints here could be fatal!

Contractor on this job, the Gorman-Lavelle Company of Cleveland, likes speed on the job. The piping itself was quickly fabricated on the ground, then raised into position. Piping went up fast—and safely!

A lateral connection near the top of the spout leads up to drains on the bridge. TUBE-TURN Welding Reducers are installed at the very top of the spout. The drain sets in the reducer with a loose fit, allowing 2" clearance all around. Thus the bridge can expand on its roller bed without disturbing the pipe. TUBE-TURN Welding Reducers, Elbows, Laterals and Caps are all part of the leading line in welding fittings.



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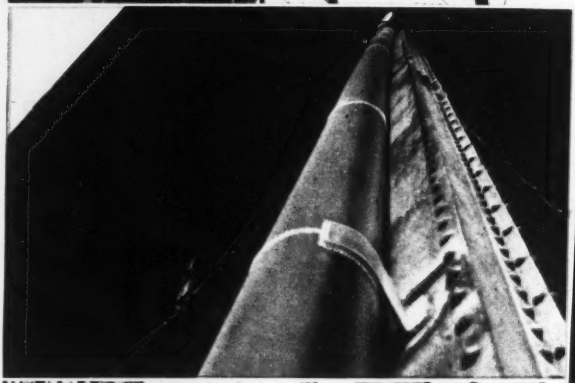

Note TUBE-TURN Welding Elbow at bottom of downspout. Drain pipe will be connected to underground sewer. Underground, too, a system welded with TUBE-TURN Welding Fittings is the best long-term bet—there are no threads to corrode, the problem of leakage is eliminated.

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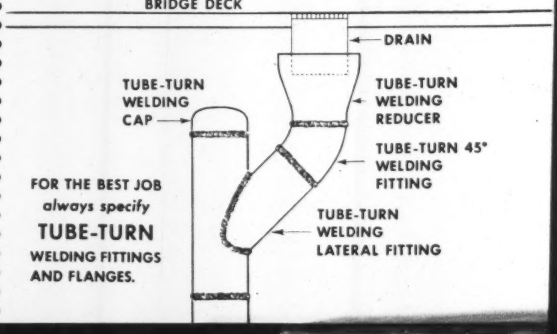

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READER COMMENT

Small soil-test specimens

Sir: Professor Wilson's report (ENR Nov. 2, p 34) on small-sized soil-compaction specimens is of great interest to everyone who is concerned with attempting to improve the present unsatisfactory status of soil testing. It is all too well known that neither the standard nor the modified AASHO method gives a true picture of the behavior of the soil in the field. The use of the smaller specimens may be a step in the right direction, though it would seem that 1/454 cu ft was extremely small, especially for soils containing coarse sand.

The author has passed over very lightly some points that seem to the writer to be even more significant than the size of the test specimen. The use of an entirely separate batch for each specimen is highly important, as is the over-night storage before molding, and the drying of the entire specimen for determination of moisture content. Where the standard AASHO method is used, by the time the moisture content reaches some point near the optimum, the specimen consists of a mass of small lumps, comparatively dry in their centers and moist on the surfaces. This condition may give densities either above or below those obtained in the field or in laboratory specimens in which the moisture is uniformly distributed through the material. The variation depends upon the nature of the soil and on the speed with which the test is run.

The time necessary to secure uniform distribution of moisture through clay soil is much greater than is generally realized. The accompanying chart gives the results of some observations on the rate of absorption of water by a clay soil, and while the conditions of this test were considerably different from those obtaining in a compaction test they do suggest the extreme RELUCTANCE with which some soils receive moisture into their mass. In each case the soil was pulverized, oven dried and exposed to the air, one in a humidifier and the other in room-air. Temperature in the laboratory ranged from 69 to 103.5 F and relative humidity from 33 to 76 percent. Note that in each case the moisture content increased as a logarithmic function of time for more than 30 days. The variations from a straight line were closely related to changes in atmospheric conditions.

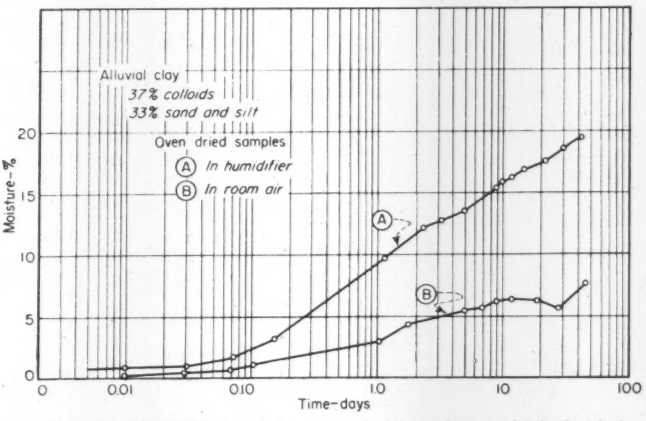
It is evident that a time of several days is required to establish a hygroscopic equilibrium, and since the hygroscopic film is a major factor governing workability of soil it should be obvious that a period of a few minutes is not sufficient for the preparation of a compaction specimen.

The writer has found that by mixing the desired quantity of water into the samples and storing overnight in tightly closed containers, consistent results can be obtained, even with highly cohesive clays, in specimens of either 1/30 cu ft or 1 liter size. The use of the 1 liter specimen has the advantage that its weight in kilograms is the bulk specific gravity of the soil and may be converted to pcf in one setting of the slide rule by multiplying by 62.4.

By drying the entire specimen the problem of securing a representative sample for moisture determination is eliminated and here the very small sample SHINES by reason of its economy of oven space. It has been observed that where the entire specimens are dried it is a rare thing to find computed air voids of LESS THAN ZERO, something that happens, more often than some laboratory operatives care to admit, where the standard procedure is used.

It is also very significant that Prof. Wilson concludes that no standardized procedure can be developed that will reproduce field results in all cases. All of which adds up to the conclusion that soil mechanics is more of an art than a science. Formulas from a handbook are of real value, and standardized testing procedures have their proper place in the picture, but there is no substitute for mature judgment based upon long experience.

HAROLD H. MUNGER,
Assistant Professor of Applied Mechanics,
Kansas State College,
Manhattan, Kansas



EFFECT OF LOCATION on the absorption of moisture by oven-dried alluvial clay.

Soil mechanics research

Sir: The recent letter of your correspondent appearing in ENGINEERING NEWS-RECORD, November 23, 1950, page 47, refreshes one's memory of the research work of the original ASCE Soils Committee (1912-1924) on "the physical characteristics of soils in relation to engineering structures."

Possibly a laissez-faire or the repetitive achievements by independent investigators may, in part, account for the delay, or they may have been neglected for later coordination. Whatever the cause, the revival of the guided ASCE "cone, or rod, penetration instrument" should lead to a practical procedure.

This simple instrument developed for field use (about 1916) was illustrated in the ASCE interim reports (1912-1924). It consisted of a guided steel shaft of one square inch section having a sliding indicator to record the depth of penetration into the soil for each applied load. It was calibrated for the variations in displacements by the cone for the applied loads and for interchangeable cones and other end shapes. After World War I it was exhibited at an ASCE soils meeting in Pittsburgh, together with the Mayer (Austrian) penetrometer. Here it was explained that the guided shaft was essential to avoid operational discrepancies by indifferent personnel. Any lateral deflections in the use of the Mayer penetrometer and similarly in the later Procter needle may be compared

(*Continued on page 52*)

To speed repair of damaged bridges, Florida's State Road Department developed this mobile maintenance unit, including completely equipped machine shop, mounted on a 10-ton La Crosse low bed trailer. Outfit carries everything from sledges to 24" lathe, welder, compressor, generator, grinders, burners, etc. A 25-ton La Crosse low boy with 3-ton crane and 30,000 lb. winch is also used for hauling and placing heavy bridge materials. Florida now operates three such mobile repair units, called "indispensible", by Maintenance Engineer E. C. DeGarmo. You, too, can speed work, cut costs by "mobilizing" your equipment on job-proved LaCrosse trailers . . . 6 to 67 tons capacity . . . single, dual or tandem axle . . . custom-built to your specific needs.

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(Continued from page 51)

to the practical experience in cement testing, wherein the use of the Vicat needle was an improvement over the previous use of the Gilmore needle. For such a reason the guided shaft is a "must". The disclosure of the recent European "cone-test" experience and the American counterpart encourages one to hope for the adoption of a useful apparatus.

Perchance, it might prove helpful to call attention to these old reports on the physical characteristics of unconsolidated soils. The differences, due to their origin and their deportment, whether in a granular or colloidal state, particularly that "bête noiré" of most soil troubles, the colloidal clay. Yet this clay is capable of conversion into a permanent irreversible condition by the application of direct heat, whether in the form of piles or other foundations.

Further, there is a real need for guidance, as to the deportment of the soil under the conditions of massive construction, such as the anchorages for suspension bridges, piers and similar concentrated loads. Also, as to whether the treatment of these concentrations should not be split up into smaller units like the main roots of a tree. This is more particularly true where consolidated and unconsolidated conditions are met with in the same foundations.

ROBERT A. CUMMINGS,
Pittsburgh, Pa.

Private shelters favored

Sir: Your editorial, "Why build large bomb shelters," (ENR Jan. 18, p 21) is the first sensible suggestion I have read on the problem.

To save the greatest number of lives and limbs, shelters have to be provided at the homes, at the jobs and during transit—a staggering amount of them. Only private enterprise can handle that job, and there is enough left for public administration to make shelters for vital public dependencies.

European and atomic bomb experiences should enable us to prepare a code that will give a fair amount of safety. Definite guiding lines should be worked up soon to start preliminary studies for shelters in every building. At the same time, some encouragement will be necessary to secure landlord cooperation.

Preparing plans and specifications for the proposed type of shelters will not be a pleasant job in many respects, but it is of vital importance and should, therefore, give great satisfaction to every professional.

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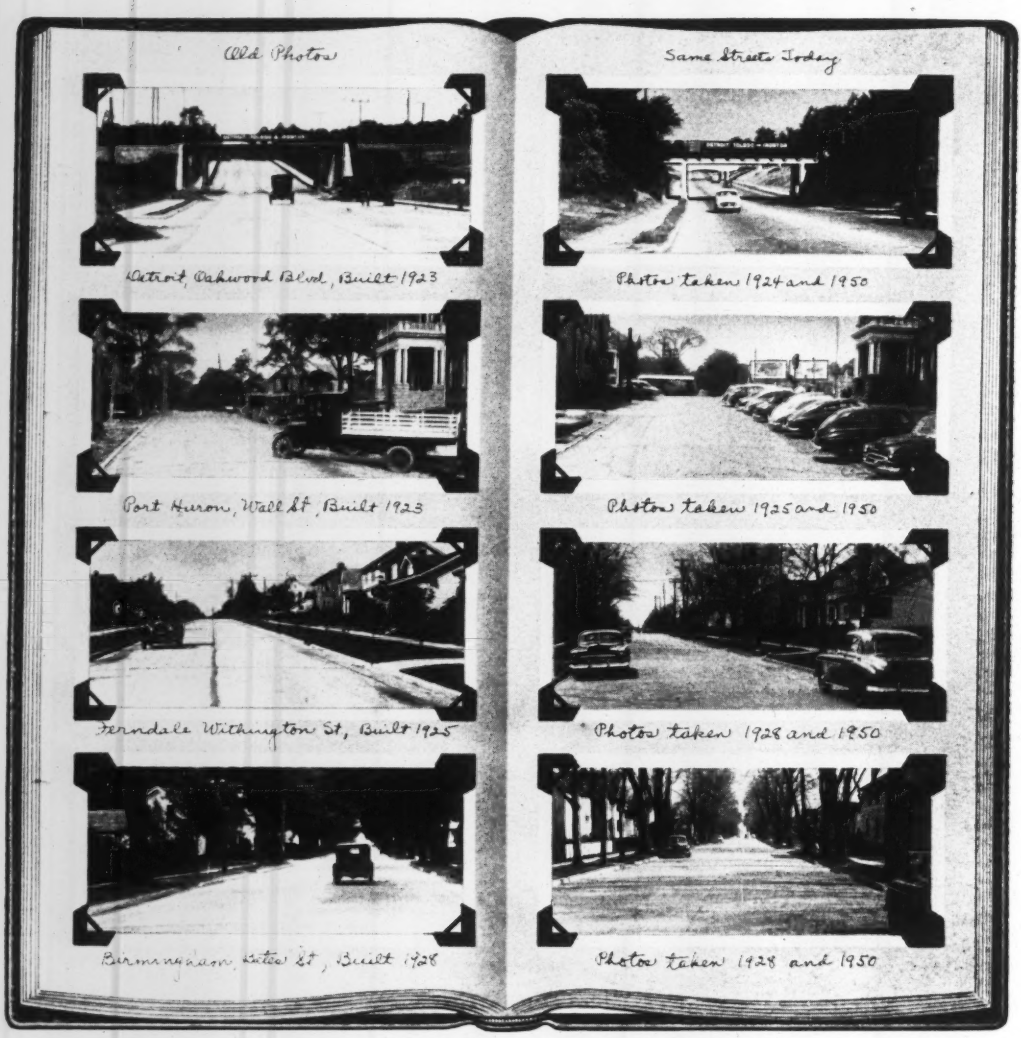
Old Photos
Same Streets Today
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STRUCTURAL SHOP DRAFTING, Volume 1—173 pp. American Institute of Steel Construction, 101 Park Ave., New York 17. $3.00

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HYDRAULIC DATA COMPARISON OF CONCRETE AND CORRUGATED METAL CULVERT PIPES—Technical Paper No. 3, Series B. St. Anthony Falls Hydraulic Laboratory, University of Minnesota, Minneapolis Minn.

HYDRAULIC TESTS OF CONCRETE CULVERT PIPES—Technical Paper No. 4, Series B. St. Anthony Falls Hydraulic Laboratory University of Minnesota, Minneapolis, Minnesota.

HYDRAULIC MODEL STUDIES FOR WHITING FIELD NAVAL AIR STATION—Part V: Studies of Open-Channel Junctions. Technical Paper No. 6, Series B. St. Anthony Falls Hydraulic Laboratory, Minneapolis, Minn.

PROCEEDINGS—1950: A.I.S.C. Engineering Conference—American Institute of Steel Construction, Inc., 101 Park Ave., New York 17.

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I VISIT MY MOTHER—By John R. Baylis, Department of Public Works, Chicago, Ill.

SEDIMENT DESIGN CRITERIA FOR THE MISSOURI BASIN LOESS-HILLS—Soil Conservation Service, Washington 25, D. C.

THE BUILDING ESTIMATOR'S REFERENCE BOOK—By Frank R. Walker. New eleventh edition. 1780 pp. Frank R. Walker Co., Chicago. $12.00 (which includes a copy of "The Vest Pocket Estimator").

OPERATIONAL CALCULUS—By Balth. van der Pol and H. Bremmer. 415 pp. Cambridge University Press: London; 51 Madison Ave., New York. $10.00.

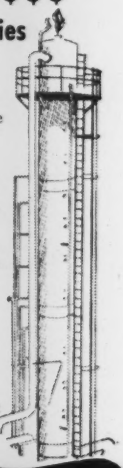
TRANSIT MODERNIZATION & STREET TRAFFIC CONTROL—271 pp. Public Administration Service, Publications Division, 1313 E. 60th St., Chicago. $5.00.

MODERN AIR CONDITIONING HEATING AND VENTILATING—Second edition. 574 pp. Pitman Publishing Corp., New York, Toronto and London. $10.00.

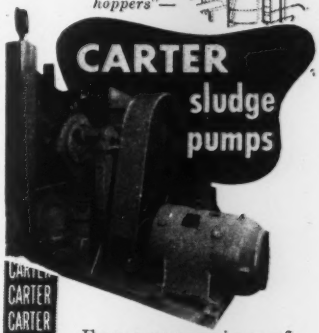
ENGINEERING HYDRAULICS—Edited by Hunter Rouse. 1,039 pp. John Wiley & Sons, New York; Chapman & Hall, London. $15.00.

(Continued on page 56)

Saving more $ $ $ in oil refineries



Refinery engineers report dependable performance—day after day—on important cost-cutting reclamation processes . . . *"transfer of bottom sediments in gravity-type oil-water separators to elevated decanting tanks"—"settled oil solids from sludge lagoons"—"cleaning out separator hoppers"—*



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SIMILITUDE IN ENGINEERING—By Glenn Murphy. 302 pp. Ronald Press Co., 15 E. 26th St., New York 10. $7.00.

PUBLIC HEALTH ENGINEERING—By Earle B. Phelps. Volume II, Part Three, The Food Contact. 213 pp. John Wiley & Sons, New York; Chapman & Hall, London. $4.00.

FAMOUS ENGINEERS—By Sara Ruth and Emily Watson. 152 pp. Dodd, Mead & Co., New York. $2.50.

MUNICIPAL AFFAIRS—By Ernest W. Steel. Second edition. 377 pp. International Textbook Co., Scranton, Pa. $5.50.

THE AMA HANDBOOK OF WAGE AND SALARY ADMINISTRATION—416 pp. American Management Assoc., 330 W. 42nd St., New York 18. $7.50 (AMA members $5.00).

MATHEMATICAL ENGINEERING ANALYSIS—426 pp. By Rufus Oldenburger. The Macmillan Co., New York 11. $6.00.

WATER QUALITY & TREATMENT—An AWWA Manual, second edition. 451 pp. American Water Works Association, 500 Fifth Ave., New York 18. $5.00.

BRICK AND TILE ENGINEERING—By Harry C. Plummer. 392 pp. Structural Clay Products Institute, 1520 18th St., N. W., Washington 6, D. C. $5.00.

THE ENGINEERING PROFESSION—Second edition. By Theodore J. Hoover and John C. L. Fish. 486 pp. Stanford University Press, Stanford, Calif. Oxford University Press, London. $7.50.

THE ENGINEERING METHOD—By John Charles Lounsbury Fish. 186 pp. Stanford University Press, Stanford, Calif. $3.00.

WELDED DECK HIGHWAY BRIDGES—247 pp. Published by The James F. Lincoln Arc Welding Foundation, Cleveland 1, O. $2.00 in U. S. A.; $2.50 elsewhere.

PROBLEMS IN ENGINEERING DRAWING—Series III. Keyed to French's Engineering Drawing. By A. S. Levens and A. E. Edstrom. 48 pp. McGraw-Hill Book Co., London, Toronto, New York. $4.00.

N. F. P. A. INSPECTION MANUAL—336 pp. (pocket size). Published by National Fire Protection Assoc., 60 Batterymarch St., Boston 10, Mass. $3.00.

CALCULO DE CONCRETO ARMADO, Vol. II—By T. Van Langendonck. 634 pp. Published by Associacao Brasileira de Cemento Portland, Sao Paulo, Brazil, S. A.

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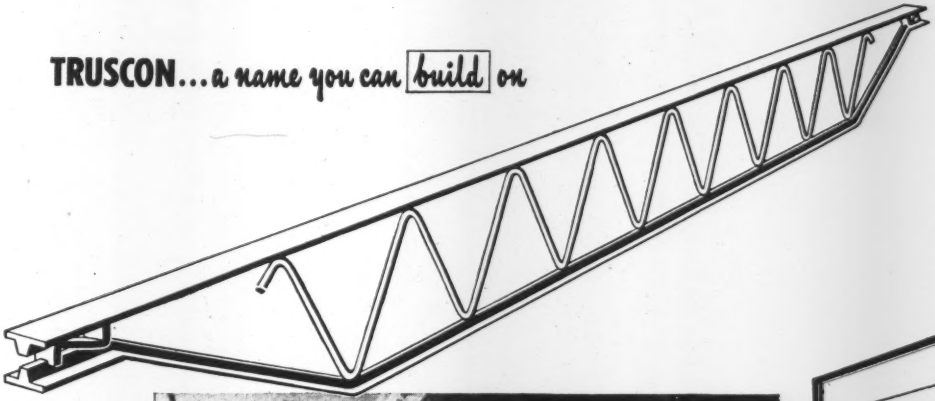

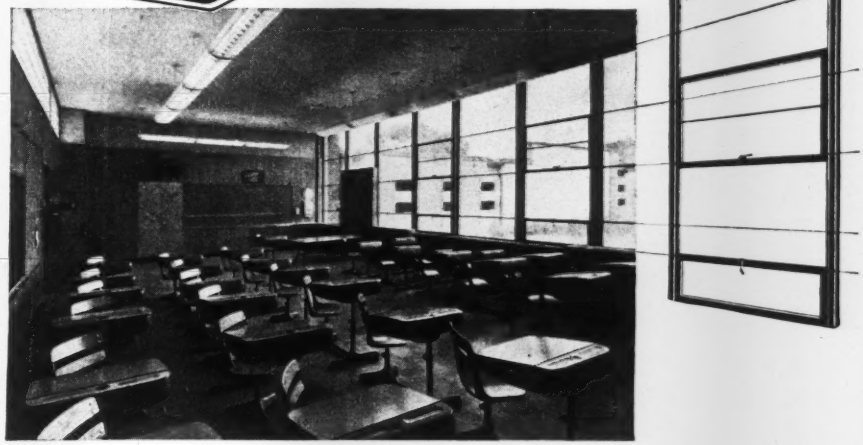

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Safety overhead and underfoot, through the unusual strength of Truscon "O-T" Open Truss Steel Joists, is assured for the Wapakoneta School, Wapakoneta, Ohio. These trusses feature great rigidity without excessive weight, through integral welding of wide, tee-shaped top and bottom chords and a strong, round continuous web member. Fire resistance is high. Simple to install—each joist is place-marked.

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"FINEST

8' x 8' top opening gives big target . . . reduces spillage of rock and dirt at cut-off trench, saves shovel swings.

Tournahopper dumps riprap through wide 8' opening . . . then turns 90° to clear. Clearance is 22" under open doors.

W. E. Logan & Sons of Muskogee, Oklahoma, report their 2-year, 4,500,000-yd. contract on Tenkille Ferry Dam across the Arkansas River near Gore, is now well ahead of schedule. Main reason, say company officials, is the all-around, all-weather production ability of 3 LeTourneau 15-yard, bottom-dump C Tournahoppers.

The Tournahoppers have been used so far on 4 major types of work: (1) hauling sandy clay and gravel from conveyor belt loader, (2) hauling shovel-loaded, unshot rock from cut-off trench, (3) dumping rock fill in the coffer dam, and (4) placing riprap on the dam face.

On 4500' haul . . . makes 8 trips an hour

When loaded by conveyor, each Tournahopper carries 12½ pay yards per trip . . . completes typical 9000-ft. cycles in 7.68 minutes. Hourly production on this haul averages 100 pay yards per machine, according to Contractor "Easy" Logan . . . combined output for the 3 rigs with loader is 300 yards hourly.

On cut-off trench assignment, now completed, the Tournahoppers moved approximately 80,000 yards of rock and 20,000 yards of moist dirt. Working under a 2½-yd. shovel, each "C" hauled 10 pay yards of mixed material per load . . . delivered 8 loads per hour on a 2000-ft. cycle

Send **NOW to: R. G. LeTOURNEAU, INC., Peoria, Illinois**

NAME_____ TITLE_____

COMPANY_____

STREET_____

CITY_____ STATE_____

Type of work to be handled_____

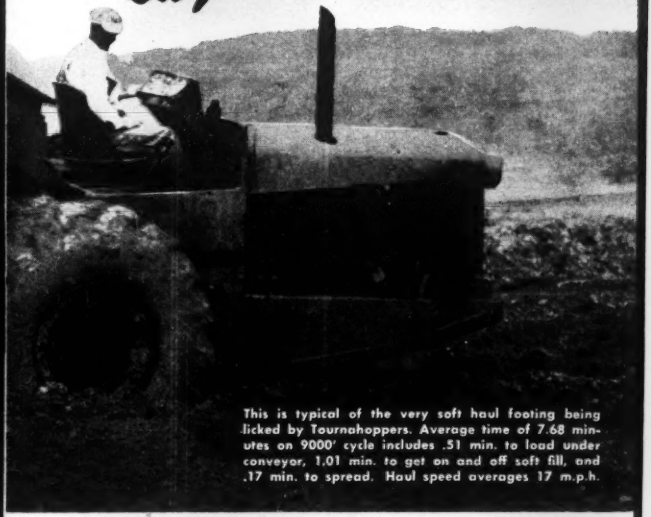
. . . for complete information on new

- ☐ bottom-dump Tournahoppers
  - ☐ 15-yd. ☐ 27-yd.
- ☐ rear-dump Tournarockers
  - ☐ 9-ton ☐ 16-ton ☐ 35-ton
- ☐ Carryall Scrapers
  - ☐ 7-yd. ☐ 15.5-yd. ☐ 30-yd.

LeTOURNEAU LET EQUIPMENT

all-around hauling units I've ever seen"

says "Easy" Logan



This is typical of the very soft haul footing being licked by Tournahoppers. Average time of 7.68 minutes on 9000' cycle includes .51 min. to load under conveyor, 1.01 min. to get on and off soft fill, and .17 min. to spread. Haul speed averages 17 m.p.h.

despite soft, slick roads which held haul speeds well below normal. Combined output here averaged 240 pay yards per hour for the 3 rubber-tired rigs.

When heavy rains made these two sections impossible to work, the 180 h.p. Tournahoppers moved onto riprap placement where moisture control was no problem. In 4 months, the 3 "C's" windrowed 22,000 cubic yards of rock . . . much of it handled under weather conditions which stopped all other haul units. Operating efficiency for the Tournahoppers in 800 hours of work has been 95%. No wonder Mr. Logan claims they're "the finest all-around hauling units I've ever seen."

Has 11 electric rigs on dam

In addition to the 3 Tournahoppers, Logan, a LeTourneau equipment user since 1936, has 8 electric-control Tournapulls at Tenkille Ferry Dam . . . 3 new 13.5-yd. "C's" and 5 big 30-yd. "B's". All 11 units were driven to the job site over paved highways from the nearest railhead.

Like Logan, you'll find it pays to standardize on Tournahoppers and Tournapulls for lowest-net-cost-per-yard. Ask your LeTourneau Distributor to show you what these modern, rubber-tired rigs can do to increase production and lower costs on *your* work. Call or write TODAY.

Read what the men on this job say about TOURNAHOPPERS

E. E. Logan, Partner . . ."Our C Tournahoppers have paid for themselves on this one job. No other machine could have handled the riprap and rock work in the cut-off section without costing us too much money. The Tournahoppers have withstood this rough work much better than any other type of hauling unit would have done . . . Tournahopper's electrical system is far superior to other power methods used to operate hauling and scraper units, with much more positive control. We can operate the machines better, maneuver better, and work in footing conditions where other units cannot be used . . . As far as I'm concerned, the C Tournahopper is very satisfactory for all types of haulage conditions and materials and I recommend it very highly."

A. C. Logan, Partner . . ."These Tournahoppers are very maneuverable and work well under both loader and shovel. The machine works much better on soft fills than 4-wheeled front-end hauling units. Its electric steer is a big help in tough conditions."

Charles Wills, Shop Foreman . . ."The upkeep and maintenance on the C Tournahoppers has been less than on any other hauling machine we've ever used . . . and much less than the upkeep and maintenance on the other type hauling units we've been running with the Tournahoppers. The 'C's' electrical system has my vote as the best way of operating any dirtmover. It's easy to work on, and the machines can do things no other type of unit could even start to do."

Ed Brown, Asst. Shop Foreman . . ."Mechanically, these machines have been just about perfect. Have had very little down-time for any reason. The electrical system has been 100% efficient. I'd rather work 10 to 1 on the C Tournahopper or C Tournapull than on any other type of hauling unit used on our job."

Robert Wright, Operator . . ."I like these machines because they handle so easily . . . it's the easiest-operating rig I've ever been on."

A. C. Kirk, Operator . . ."You can turn the Tournahopper on a dime."

Perry Johnson, Operator . . ."We work these rigs in places you could hardly get a mule through."

J. R. Cato, Operator . . ."I can position my Tournahopper under the loader quicker with this machine. It sure is easy to handle."

Tournarocker, Tournahopper—Trademark
Tournapull, Carryall—Trademark Reg. U.S. Pat. Off. C145

LETOURNEAU TOURNAHOPPERS

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- **SAFETY UNDER EXTREME EXTERNAL LOADS**
- **EVERY JOINT FLEXIBLE AND WATERTIGHT**
- **EASILY TAPPED**
- **SPECIALS TO MEET INDIVIDUAL SPECIFICATIONS**
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SCOPE OF SERVICES — Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipes of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

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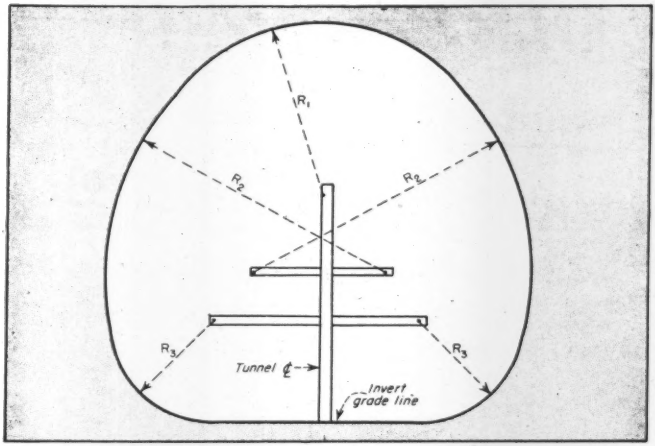
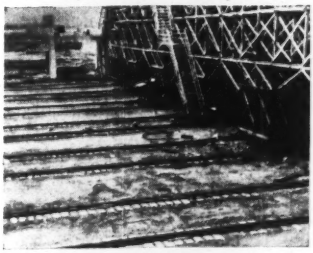


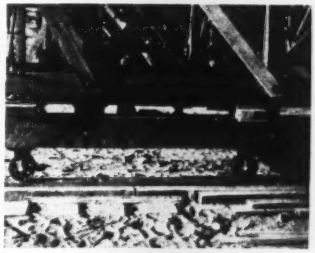
DRILL AREA of horseshoe-shaped tunnels is quickly drawn as . . .

Templet speeds tracing of tunnel outline

A time-consuming operation in the construction of horseshoe-shaped tunnels with perimeters made up of arcs of various radii, is the location of the centers of the circles for the required arcs. To speed this operation, E. J. Sankner, tunnel builder of Brooksville, Fla., devised a templet consisting of two horizontal cross members nailed at right angles to a vertical upright. Hooks are located at the ends of the cross members and the top of the upright. To these hooks are attached cords equipped with marking crayons. Length of the cords, location of the hooks, and height of the cross arms is determined by the size of the required arcs.

With Mr. Sankner's templet, two men equipped with a transit and rod quickly handle all steps in marking the tunnel outline. As the last car of muck is pulled past a set-up point, the transit man sets up over that point and locates the invert grade and centerline of the next station. The templet is then set in place with its lower end on the invert grade line and one edge of the upright directly on centerline. Having thus set the templet, it is a simple matter to swing the necessary arcs.





Scaffold on casters moves on angle-iron tracks

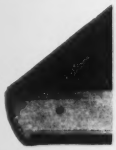
PORTABLE SCAFFOLD, mounted on casters riding on angle-iron tracks, enabled Swinerton & Walberg, contractors, to make substantial savings in time, labor, and materials in building the Denver Municipal Auditorium.

Instead of building a complete scaffold for the entire structure, this firm constructed just one section, which was easily moved as the job progressed. This eliminated costly erecting and tearing down of separate scaffolds for each roof section. The scaffold-on-wheels supported forms for the roof, which were built under each roof section to be poured. The forms were raised by hydraulic jacks to roof height,

(*Continued on page 63*)

Practical answers to specific problems in . . .

planning and designing foundations



THIS profusely-illustrated guidebook provides you with sound instructions on every important phase of foundation engineering — from how to gather and interpret data regarding soils, and how to plan the support of a structure, to how to handle the construction of that foundation.

Packed with time-saving methods and tips on the planning and dimensioning of foundations, the book clearly illustrates a wide variety of problems . . . *and provides quick answers based on actual practice.* Throughout, emphasis is put on the *creative planning* of foundations, and on the use of soils for the purpose of supporting specific structures.

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Professor of Civil Engineering, Yale University

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IN SIMPLE, clear language, and with the aid of over 400 illustrations, this guidebook describes the ordinary types of foundations encountered in engineering practice . . . shows the principles of the action of foundations . . . tells how some actual substructures were planned and what happened to them . . . and explains many detailed, worked-out design problems. From types of foundation materials, shearing of soils, spread footings and grade beams . . . to precast-concrete piles, forces acting upon piers, and abutments for arches—here are the principles, methods, ideas, data, and practices you need for handling the *regular* and *special* jobs met in modern foundation engineering.

detailed information on such

- properties of specific foundation materials
- planning subsurface explorations
- estimates of settlement
- walls to spread a single concentrated load
- mats to resist hydrostatic pressure
- anchors for backstays
- pile-driving formulas
- choice of type of pile
- pneumatic caissons
- abutments for rigid-frame bridges
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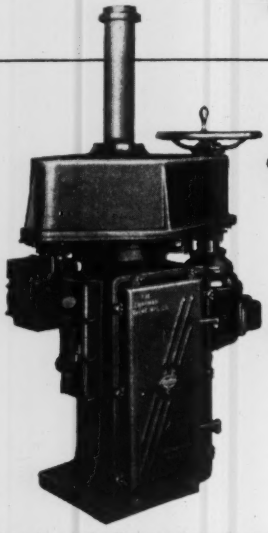


Shown here is the Chapman Motor Operated Floorstand for control of valves and Sluice Gates.

Chapman Sluice Gates are available in standard sizes to meet practically all installation requirements. And, where necessary, many special sizes are also available from existing pattern equipment.

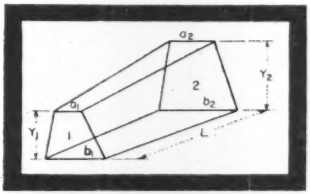
Sluice Gates can be equipped with any required type of operating control — manual, hydraulic cylinder or electric motor. No matter what your problem, there is a type of operating mechanism and a size to do your job.

Chapman Motor Units are completely factory wired and ready to operate on installation. Manual control, which utilizes the gear train for easy operation, is also provided for use in case of power failure.

THE CHAPMAN VALVE Manufacturing Company, INDIAN ORCHARD, MASSACHUSETTS

and the section poured. After the section was set, the forms were lowered by jack and the scaffold moved about 40 ft into position for the next section.

The 10-in. heavy-duty grooved-wheel casters were manufactured by The Bassick Co. of Bridgeport, Conn.

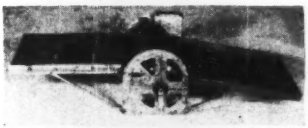


Simpler still?

The Dec. 28, 1950, issue of ENR, p 38, contained a description of the Long Island Rail Road formula for computing the volume of a wingwall. Now we hear from Ralph E. Bail of Bail, Horton & Associates, Fort Myers, Fla., who says:

"I read with interest the item on prismoids. The formula as given in the first part of the item looks simple, but when analyzed, breaks down into thirteen separate steps, just as the author states. For simplicity, try this formula employing only eleven steps. It is derived directly from the standard prismoidal formula. The answer arrived at is exactly the same as that obtained using Mr. Gate's formula.

$$V = L/12\ [(a_1 + b_1)(2Y_1 + Y_2) + (a_2 + b_2)(Y_1 + 2Y_2)]$$

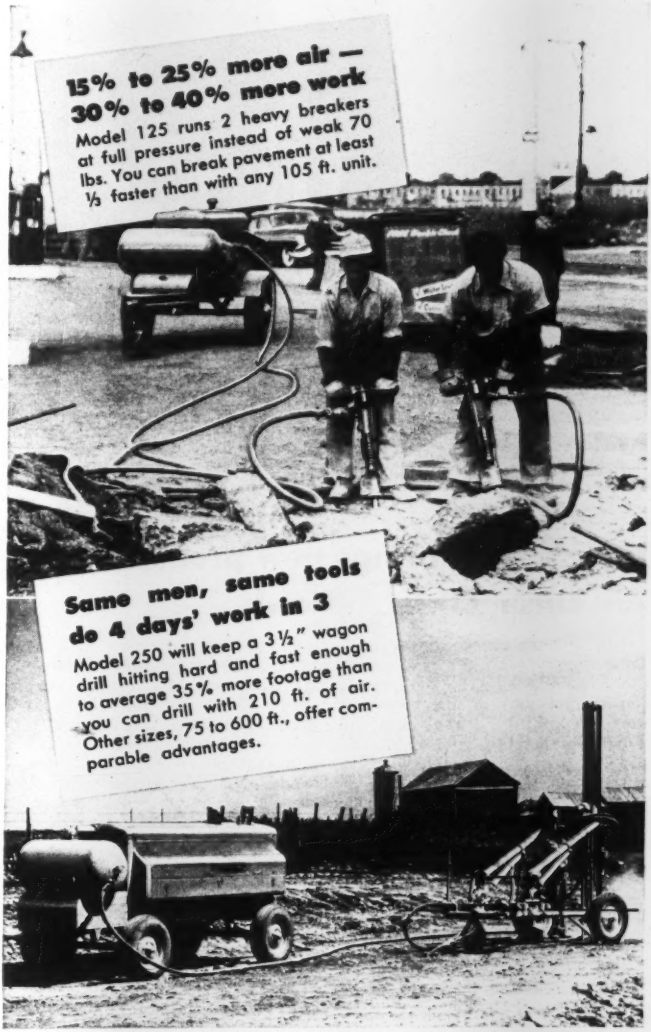


Map reproduction device

A 22x29in. spirit duplicator, capable of producing large-size multicolored maps, map overlays, overprints, and miscellaneous sketches and diagrams has been developed at the Engineer Research & Development Laboratories, Fort Belvoir, Va.

Hand operated and friction fed, the duplicator is able to print four colors. Special color carbons of purple, red, blue, and green are used in drafting a master copy which is then placed on the machine's revolving drum. Paper is fed through spirit-dampened rollers before contacting the master copy under pressure and is then delivered to the receiving chute in finished form. It has been operated satisfactorily in temperatures from plus 25 F to plus 130 F, and is capable of an accuracy of register within 1/32 in.

"new standard" Jaeger Compressors


15% to 25% more air —
30% to 40% more work
Model 125 runs 2 heavy breakers at full pressure instead of weak 70 lbs. You can break pavement at least ⅓ faster than with any 105 ft. unit.
Same men, same tools do 4 days' work in 3
Model 250 will keep a 3½" wagon drill hitting hard and fast enough to average 35% more footage than you can drill with 210 ft. of air. Other sizes, 75 to 600 ft., offer comparable advantages.

Why starve your modern air tools with "old standard" compressors that have not increased their air output in 19 years? Jaeger Air-Plus standards provide the increased air you need to power today's tools at their full efficiency—*at the lowest cost per foot of air of any compressors on the market.*

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MUNICIPAL AFFAIRS

TULSA'S POPULATION is now 180,586—an increase of 40,000 in ten years, and a further large increase is expected this year on account of the reopening of the Douglas Aircraft bomber plant. Last year Tulsa broke all previous industrial records in its 50-year history.—(Delmar L. Curtis, Aerial photo.)

New wealth brings new problems for Tulsa, Okla., officials

Total construction contracts in Tulsa County, Okla., in 1950 topped the $50,000,000 level. The biggest construction jobs in the city were the 20-floor First National Bank and Trust Co. building cost $5,000,000 and the 8-story Service Pipeline Co. building, at $3,000,000.

Last year more than $9,000,000 was spent in new home construction, bringing the city's total dwelling units to 60,000. This has considerably eased Tulsa's housing problems for the present but the influx of workers at the Douglas Aircraft Corp.'s bomber plant may create another housing problem in 1951. The plant will make B-47 jets on a full production basis.

Tulsa has been striving to improve its streets and conquer the traffic problem since 1946. Main emphasis has been on the extensive use of one-way streets. The city has also carried out a street widening program. But perhaps the most successful step in alleviating downtown traffic troubles is the no-parking ban on certain one-way streets from 4:30 to 6 p.m. This allows six-lane traffic in the downtown district during its most congested period.

However, Tulsa traffic and other problems are still getting serious attention from the municipal officials. City Commissioners Glenver McConnell and Dean E. Foster, both retired engineers, are busy now with long-range plans for the street department and the water and sewerage department. Foster says the city needs a $9,000,000 street improvement program at the present time.

Commissioner McConnell, meanwhile, is closely watching the city's water consumption which reached an all-time high in 1950 with the use of 9,261,000,000 gallons. The city has already constructed a new flow line from Spavinaw Lake to the city's reservoir, Mohawk Lake, and hopes this line will be sufficient to meet future demands.

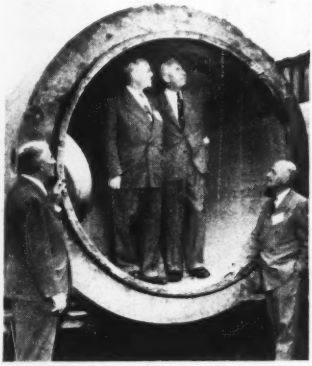
Another project which will affect Tulsa's future is the $31,000,000 Turner Turnpike, a super-highway which will connect Tulsa and Oklahoma City. Preliminary surveys have already been made on the project and it is expected to be completed in 1952.

The beginning of construction on the turnpike has prompted Tulsa to erect another bridge over the Arkansas River at 51st and Riverside Drive. This bridge will serve as a connecting link for the toll road, and other highways leading into Tulsa. It will also alleviate crosstown traffic. Bond issues to finance it have been voted to the extent of $1,300,000. The bridge is scheduled for completion late in 1951 or early in 1952.

Municipal Briefs

Massachusetts schools—Bay State cities and towns have appropriated more than $39,000,000 for construction of new schools during this school year, a 99.6 percent increase over last year's figures, according to the State Department of Education. Besides the 75 cities and towns which have already appropriated money, 63 other communities have reported that they are planning construction. More than $19,000,000 will be spent for elementary schools, $11,000,000 for junior high schools, $7,000,000 for senior high schools and $1,000,000 for combined schools.

Connecticut suburbanites—During the last 10 years there has been a sharp trend from city to suburban living in Connecticut, according to percentage increases in dwelling units, recently announced by the State Development Commission. The figures show that dwelling units for the entire state rose by 25.7 percent, or from 488,543 to 614,075. The nine centers of more than 40,000 population, however, were below the state average, with the exception of Stamford, which had an increase of 27.1 percent in dwelling units.



THIS 26-TON SECTION of concrete pipe, 7 ft in diameter and 16 ft long, is a link in the outfall sewer for the new $17,000,000 sewage disposal system of Portland, Ore. Sections are designed to function under 50 ft of water in Columbia Slough and out into the main channel of the Columbia River where effluent from city's new disposal plant will be discharged. Inspecting the section are, from left, Portland City Commissioner Fred L. Peterson; City Commissioner Kenneth L. Cooper; W. Alllen Grubb, vice-president and general manager of American Pipe & Construction Co., which holds contract for construction of pipe, and William Bowes, city commissioner of public works.

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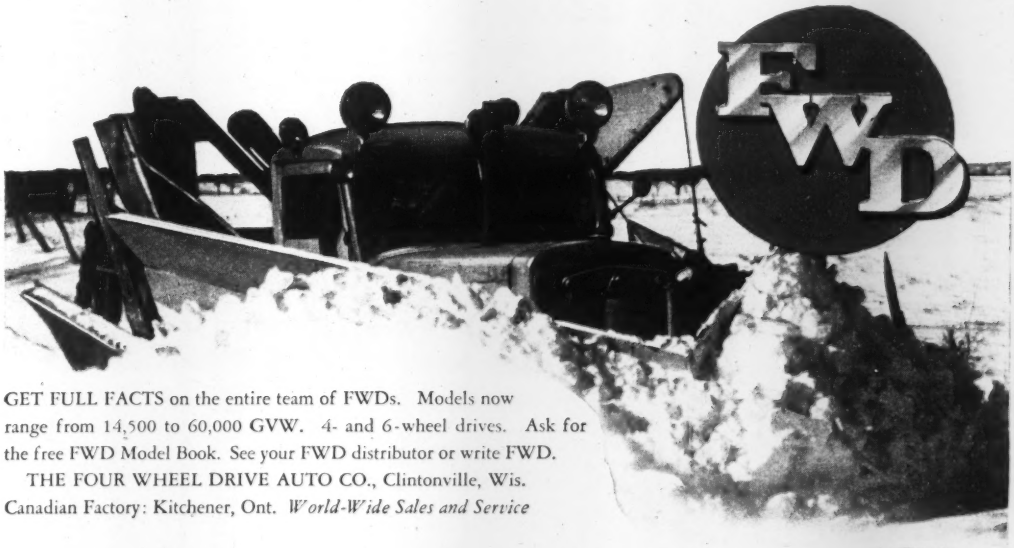
"When other trucks must stay at home . . . our FWDs are on the job. It pays out the year 'round on hauling . . . maintenance . . . snow and ice control . . . doing a *better* job and with *greater safety* — both on or off the highway."

You choose lower maintenance costs... longer truck life

"Our FWDs need fewer repairs because there's less strain . . . both load and power are properly distributed. We've found that an FWD has up to twice the life."



GET FULL FACTS on the entire team of FWDs. Models now range from 14,500 to 60,000 GVW. 4- and 6-wheel drives. Ask for the free FWD Model Book. See your FWD distributor or write FWD.

THE FOUR WHEEL DRIVE AUTO CO., Clintonville, Wis.
Canadian Factory: Kitchener, Ont. *World-Wide Sales and Service*

America's Foremost Heavy-Duty Truck

WOOD Mix-in-Place R

Wood Road-Mix Methods of Pavement Construction have been the accepted standard for more than 17 years. For asphaltic and soil-cement surfacing or re-surfacing, and base course stabilization, Wood Road-Mix methods are used throughout the world for the construction of roads, streets, highways, airports, landing strips and parking areas.

As the pioneer and leader in this field, Wood offers a line of

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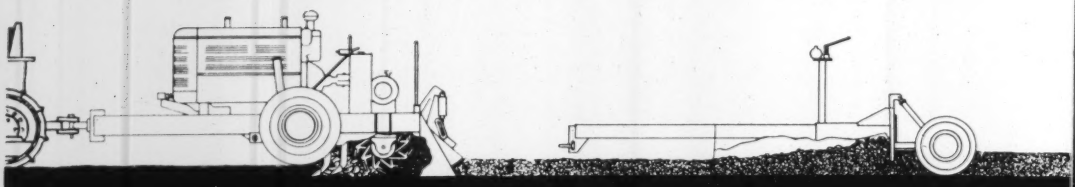
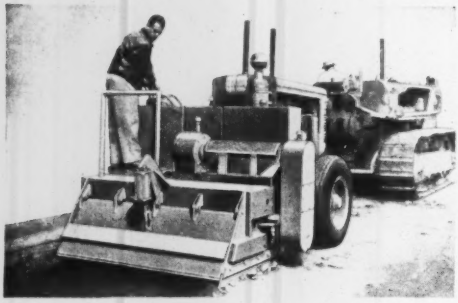


THE WORLD'S LEADING LOW-COST MIX-IN-P

WOOD MODEL P-600 PREPARIZER

A contractor's tool — not a piece of modified agricultural equipment. The only machine that scarifies and pulverizes old pavements or hard soils in one operation. The Wood P-600 Preparizer will both scarify and pulverize tougher asphalt pavement than can be scarified by a motor patrol. Completely reclaims and prepares old asphalt or macadam into select aggregate for low-cost 100% re-use. Prepares adobes, clays and other hard soils for mix-in-place soil stabilization. The Wood Preparizer is also used for soil blending and to aerate prepared and mixed materials. Has many other uses. As a separate unit in the mixing train, its power, speed and capacity keep it well ahead of the mixer. Diesel powered, tractor pulled.



WOOD WINDROW PROPORTIONER — WOOD WINDROW SPREADER BOX

A **controlled** job is a good **job.**

The Wood Windrow Proportioner measures and forms materials on the roadbed into accurately proportioned windrows. Tailgate adjustable for windrow capacity — 2 to 8 cu. ft. Hand-operated hydraulic system allows independent adjustment of wheels for depth control. Material-gathering wings adjustable for variable widths. Pneumatic tires. Easily moved from job-to-job by light truck.

For select material jobs and for truck aggregates, a Wood Adjustable Pre-measuring Spreader Box, mounted on four pneumatic tires, is available.

Both of these units are designed to stay on subgrade. Will not ride over material.

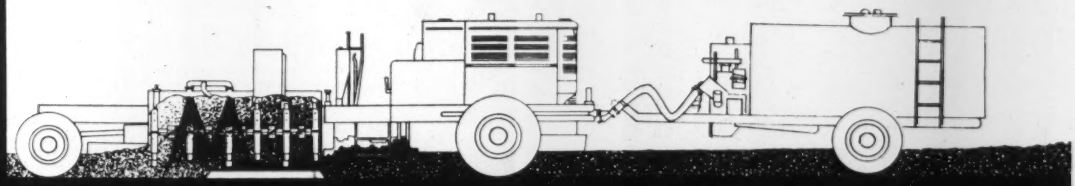
A **controlled** job is a good **job.**

See your Wood Distributor or write for literature. Wood Distributors are located in all principal countries throughout the world. Export Offices: 215 West Fifth St., Los Angeles 13, California. Cable Address: Woodor.

OADBUILDING EQUIPMENT

uilding equipment specifically designed for mix-in-place ses. Wood Road-Mix methods using this specialized equip- offer these important advantages: the use of native or materials, where acceptable, as well as imported aggre- which cuts material handling costs to a minimum — elimi- of the central plant and additional equipment and man- for hauling materials — the choice of emulsion, road-oil or soil-cement mixes, permitting complete flexibility of design — highest production at lowest cost per square yard or per ton — the lowest capital investment per ton of capacity of any mix-in-place equipment on the market.

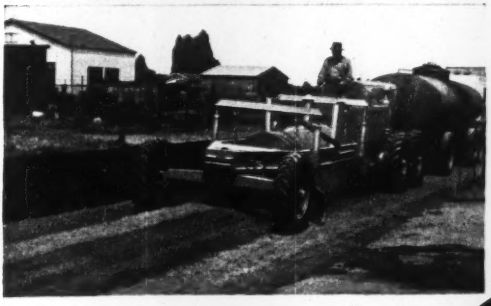
Illustrated below is a typical train of Wood Mix-in-Place Roadbuilding Equipment. From Preparizer to Tank Trailer, it's made-to-order for any of your paving jobs.



ACE METHOD OF PAVEMENT CONSTRUCTION

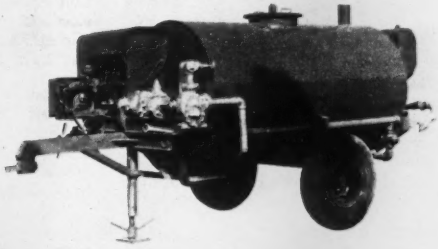
WOOD ROADMIXER

A complete traveling mixing plant. One engine. One-man operated. One-pass mixing. Three models: Model 36, self-propelled and powered, capacity up to 150 tons of ready-to-spread mix per hour, windrows up to 4 cu. ft.: Model 42 (Illustrated below), self-propelled and powered, capacity up to 200 tons per hour, windrows up to 6 cu. ft.: Model 54, tractor drawn and powered, capacity up to 350 tons per hour, windrows up to 8 cu. ft. The Wood Roadmixer is the only traveling mixing plant available in capacities to fit the job! Designed and built by construction engineers for construction engineers.



WOOD TANK TRAILER

Designed for use with Wood Roadmixers, the Wood Tank Trailer carries road oils, emulsions and other binder fluids. A 3" Roper pump, powered with either a Chrysler or Ford industrial engine, is mounted on the tank trailer. This permits the transfer of binder from the supply truck to the tank trailer without interrupting the operation of the Wood Roadmixer. The Wood Tank Trailer is made in two sizes: 1500 gallon capacity (as shown above), for use with Wood Roadmixer Models 36 and 42, and 3000 gallon capacity for use with Wood Roadmixer Model 54. Furnished with or without pump unit, insulation, heating flues and burners.



ROADBUILDING EQUIPMENT

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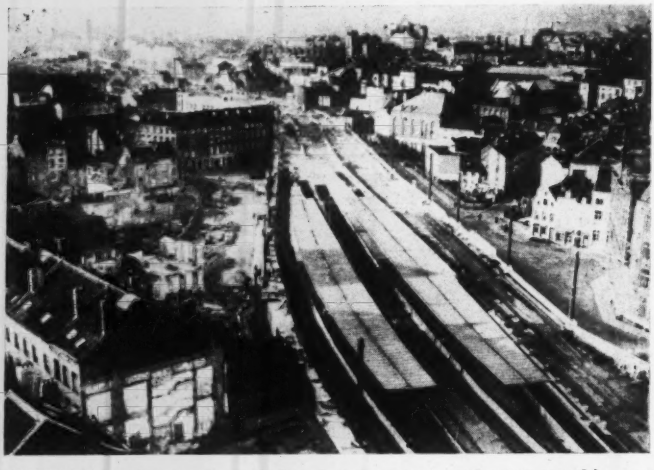
DEVELOPMENTS ABROAD



AFTER 100 YEARS—A railroad job first planned a century ago but interrupted by wars and depressions, a 6-track swathe from north to south through Brussels, Belgium, is now nearing completion. The line will link the northern and southern Belgian railway networks. Thousands of houses have been razed to make a path for the 2 mile long track. Photo shows the new station in the heart of Brussels-La Chapelle. The skyscraper-like building in the distance at left is the new south station. The new line is carried partially in tunnels.—Wide World photo

American firm to rebuild Venezuelan national ry.

The Venezuelan government has awarded a $15,000,000 contract for construction of the Venezuelan national railway to Morrison-Knudsen, Inc., of Boise, Idaho.

It is the second contract of that size awarded to the Boise firm by that South American country last year. The other was awarded for driving the Boqueron tunnel, a twin-bore excavation, as part of the Caracas-La-Guaira highway.

Both contracts were awarded on the basis of competitive bidding.

Construction on the railroad rebuilding project should begin very shortly, H. W. Morrison, president of the firm, announced. It calls for reconstruction of 350 mi of railroad line. The deal was arranged by Morrison during a recent visit to Venezuela.

Foreign Briefs

Nyasaland water project—This spring surveyors will start mapping out a large water control and hydro-electric project in the British protectorate of Nyasaland, Africa. The survey will be undertaken by Sir William Halcrow and Partners. It is expected that such a project would stop the flooding of the lower Shire River, flowing from Lake Nyasa to the Indian Ocean, and would reclaim wide tracks of fertile land. It is proposed to build a dam across the river at Fort Johnston near the outlet of the lake. It will be for irrigation, flood control and power purposes.

Revive ancient mines—The Economic Cooperation Administration will advance $102,193 to Mediterranean Mines, Inc., an American mining firm operating in Greece, to expand operations in the historic Laurium mines near Athens. The operation will provide lead and zinc for the U. S. stockpile of strategic materials, and for export to other Marshall Plan countries.

London airport subway—A vehicle subway, 2,000 ft long and 80 ft. wide, to link the new main South Terminal disembarkation area at London Airport with the Bath Road, is now being built. The main contractors are Taylor Woodrow Construction Ltd. The subway will go under No. 1 Runway, normally the busiest on the airport, and during part of the work traffic will be diverted to No. 5 Runway, about one mile to the south. The reinforced concrete subway will contain two carriageways, each 26 ft wide, for main traffic and two suspended cycle tracks. The floor will be approximately 30 ft below ground level and there will be a 10-ft cover of earth. Over 600,000 cu. yd. of earth will have to be excavated for the subway, which will be constructed by open-cut.

To develop Liberia—The United States and the Republic of Liberia have concluded a general Point 4 agreement for cooperative economic development of that country. Liberia has asked for U. S. assistance in carrying out a new long-range development program, the Liberian government to contribute 20 percent of its total national revenues toward the cost. Technical Cooperation Administrator Henry G. Bennett, Department of State, announced that the U. S. will contribute the services of 67 technicians, plus needed equipment. It is expected that the annual rate of U. S. spending for the program will reach $850,000 by next June. It will take between five and ten years and cost about $32,500,000 to carry out the program to be concentrated on roads, bridges, hydroelectric power and water works, to cost about $11,300,000; agricultural development concerned with food, rubber, cocoa and palm oil, to cost approximately $4,200,000; health projects, $8,700,000; projects in basic education, $7,100,000; projects to extend and improve public administration, about $1,200,000.

(*Continued on page 70*)

NEW NOTTINGHAMSHIRE COAL SHAFT—Coal is Britain's major capital asset. This year about $70,000,000 will be invested to increase production. In this new shaft at Calverton, Nottinghamshire, a brine solution, cooled to 37 deg. below zero, is circulated through the pipes shown to form a collar of ice around the shaft to a depth of 412 ft. This prevents water from pouring into the workings through the porous limestone strata.—(Eastern Publishers photo)

THE TRUCK BUILDER WHO SOLD THE GREATEST NUMBER OF TRUCKS IN 1950* USED

TIMKEN-DETROIT

TWO-SPEED FINAL DRIVES IN ALL TWO-SPEED AXLE-EQUIPPED TRUCKS!

Simple
Rugged
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by billions of miles of on-the-job operation!

*and in previous years, too!

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You can count on

Many Construction Skills

when you call in

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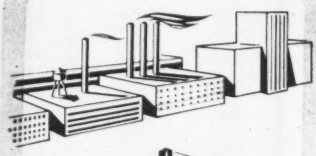
INDUSTRIAL

Whatever your project, it will not be "out of our line," for Merritt-Chapman & Scott's vast experience is based on a broad range of construction assignments. In the pulp and paper industry, for example, M-C & S has put its specialized skills to work building new plants or additions for 12 companies within the past 10 years. M-C & S is now starting work on two additional paper mills.

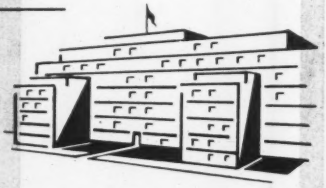


MARINE

Now at work, among others, on the substructure for the 4.3 mile long Chesapeake Bay Bridge, M-C & S's diverse construction skills have helped build many of America's major bridges. Recent projects include the Mystic River Bridge, Boston, the Mississippi River Bridge at Memphis, and the Delaware Memorial Bridge near Wilmington, Del., for which M-C & S constructed the largest caisson in surface area ever built.

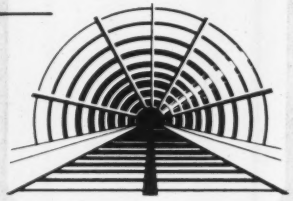
BUILDING

Merritt-Chapman & Scott's ability to produce the highest standard of work at the lowest possible price has been sharpened by wide experience. In the hospital field alone, M-C & S has just completed two projects for the Veterans Administration and is now constructing a third VA hospital at West Haven, Conn.



HEAVY

Tunnel construction calls for a combination of heavy muscle and needle-point precision, demands absolute mastery of every building skill. M-C & S has built three of the nine trench-type tunnels in the United States and is at work on a fourth. As a builder of piers, M-C & S is equally well known. Latest such project is the new Mystic Pier terminal, Boston.



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GENERAL OFFICES

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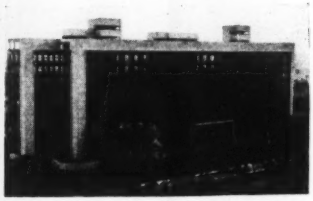
CLEVELAND • BOSTON • NEW LONDON

LOANED TO AUSTRALIA—W. A. Dexheimer, of Denver, assistant chief construction engineer of the Bureau of Reclamation, is on 60-day loan to the Australian commonwealth to furnish specialized services on the big Snowy Mountains development, involving transbasin diversions for power and irrigation now in their beginning stage. The detail was arranged through the Department of State. Dexheimer will also advise the State Electricity Commission of Victoria, which is building the Kiewa tunnel. Dexheimer has worked on the Kittitas, Boulder Canyon, Salt River and Central Valley projects, including duty on Hoover and Shasta dams. He joined the staff of the Bureau's chief engineer at Denver in 1947, following war service in the Orient.



MEXICAN SOCIAL SECURITY—One of the handsomest structures recently erected in Mexico City is this 13-floor Social Security headquarters building. It cost $2,700,000 and will serve as headquarters for the rapidly expanding network of Mexican social security clinics, now serving 431,000 workers and their dependents. Located on Paseo de la Reforma, besides its offices the building has an auditorium for 700 persons. There is a 101-car garage in the basement.

Paris-Lille highway—Plans have been approved for construction of a 130-mile modern highway between Paris and Lille. Its two one-way lanes will be separated by a strip of ground 16 ft wide.

Torrington Bearings prove reliability in Lippmann jaw crushers

Never a bearing failure with proper maintenance—so report *Lippmann* engineers of Torrington Roller Bearings used in *Lippmann* Grizzly King Jaw Crushers. This service record has been earned in the toughest applications, like the 36 x 48 Grizzly King at the Pelham, Ala., plant of McCullough Industries.

Day-in and day-out, Torrington Roller Bearings help *Lippmann* Crushers handle high production schedules. These precision bearings provide line contact for maximum capacity. Heavy radial and thrust loads developed in continuous operation are handled with ease.

Help your equipment benefit from uninterrupted high production and on-the-job reliability by specifying Torrington Bearings.

SPHERICAL ROLLER
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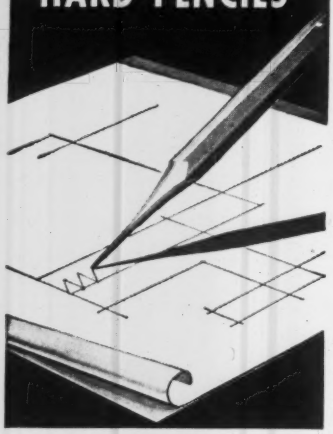
Imperial
TRACING CLOTH FOR HARD PENCILS



• Imperial Pencil Tracing Cloth has the same superbly uniform cloth foundation and transparency as the world famous Imperial Tracing Cloth. But it is distinguished by its special dull drawing surface, on which hard pencils can be used, giving clean, sharp, opaque, non-smudging lines.

Erasures are made easily, without damage. It gives sharp, contrasting prints of the finest lines. It resists the effects of time and wear, and does not become brittle or opaque.

Imperial Pencil Tracing Cloth is right for ink drawings as well.

Imperial
PENCIL TRACING CLOTH
SOLD BY LEADING STATIONERY AND DRAWING MATERIAL DEALERS EVERYWHERE

MEN AND JOBS

Walter K. Hopkins, city engineer, Hanford, Calif., was recently elected city manager. He attended the Colorado School of Mines, and had worked for the Los Angeles County surveyor, Koebig & Koebig, municipal consultants, and the Metropolitan Water District distribution design department. As engineer for Hanford, he supervised the construction of a $226,000 sewage disposal plant and $105,000 sewer lines, and worked on a new building code and zoning ordinance for the city, since adopted.

William Guerry Pruett, office engineer in the Alabama State Highway Department, has been named state highway director. He received his degree in civil engineering from Alabama Polytechnic Institute in May, 1937, and has since been connected with the highway department.

William H. Oglesby, superintendent of the Southern Railway System's Danville division, at Greensboro, N. C., has been named division superintendent at Knoxville, Tenn., and has been succeeded at Greensboro by **Albert W. St. Clair,** division superintendent at Asheville, N. C. At Knoxville, Oglesby succeeds **Charles K. Carter,** reassigned to the Richmond, Va., division, and **E. Rogers Oliver, Jr.,** has been moved from Richmond to Asheville, succeeding St. Clair.

T. W. Hoff, assistant chief engineer of the Inner Belt Freeway, Cleveland, Ohio, has resigned to open a private structural engineering consulting and designing firm under the name of Trygve Hoff & Associates at 4500 Euclid Ave., Cleveland.

Morton Friedman has been appointed chief valuation engineer of the New York Central system at 466 Lexington Ave., New York City.

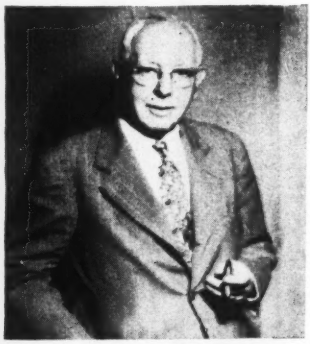
Thomas O'Dell, a district engineer for the Oklahoma State Highway Department, has resigned, to become manager of the Portland cement plant at Ada, Okla. He had been with the department for 25 years.

Alexander C. Youngson and **Felix A. Ciampa** have formed the partnership of Youngson & Ciampa, consulting engineers, at 140 Cedar St., New York 6, N. Y., to specialize in building, bulkheads and waterfront work.

Ralph C. Jones, supervising highway engineer, Division 9, U. S. Bureau of Public Roads, Denver, Colo., retired. He had served 36 years in federal service, of which 30 years were with Public Roads and the balance with the Interstate Commerce Commission. Mr. Jones served in the Federal Aid Highway Section of the Bureau.

Mark B. Whitaker, superintendent of water, has taken over officially as acting general manager of the Knoxville, Tenn., Utilities Board Operations. **C. E. Eubanks,** former chief engineer in the water department, is now act-

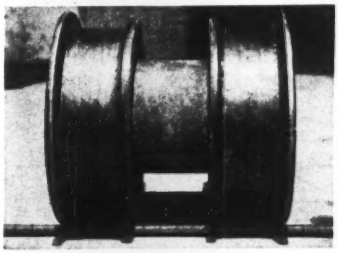
(*Continued on page 76*)



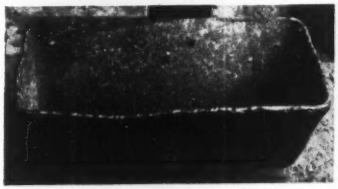
Frank N. Barker, left, has been appointed chief highway engineer of Illinois, succeeding Clifford M. Hathaway who retired on Jan. 1 due to ill health. Both have been career men in the highway department—Barker, for 28 years and Hathaway for 39. Barker, joined the department in 1923 upon graduation from the University of Missouri with a degree of B.S. and C.E. From 1936 to 1939 he was head of highway planning surveys and, since then, engineer of highway research. Hathaway, who will continue in a consulting capacity with the department, is a civil engineering graduate of Brown University and did graduate work in highway engineering at Columbia University. From 1922 to 1949 he was engineer of construction, at which time he was promoted to chief highway engineer.

MULLER TIRES last indefinitely when hard-faced occasionally with transverse stringers of Stoody Self-Hardening 21. If badly worn, first rebuild with Stoody Manganese or Stoody High Carbon.

CRUSHERS, including gyratory mantles, jaws and roll types continue to operate when built-up with Stoody Manganese and hard-faced with Stoody Self-Hardening 21. Gyratories and roll types are easily hard-faced automatically.



TRACTOR PARTS, such as rollers, idlers, pads, etc., easily outlive several new parts when wearing areas are kept protected with Stoody 1027. Automatic application cuts costs on many parts.



CONVEYOR BUCKETS When lips are protected with Stoody Self-Hardening, conveyor buckets continue to carry full payloads long after ordinary buckets are reduced to partial efficiency or worn beyond further use.

How to get along Without hard-to-get replacement parts

Heavier military demand for steel means less steel for everyone. Less steel equals fewer parts and a possible return to the old worries of keeping equipment in operation with what you have.

YOU CAN SAVE YOUR STOCK OF SPARES, you can make every part last *much* longer by hard-facing with STOODY ALLOYS now!

STOODY ALLOYS slow down abrasive wear on all equipment . . . fight wear losses resulting from heat, corrosion, and impact. They keep equipment going when the going is tough—and show remarkable economies of operation, too.

If you want to be set for the future, do your hard-facing now! And keep your equipment hard-faced with STOODY ALLOYS to insure top operating condition . . . to make every part last its utmost!

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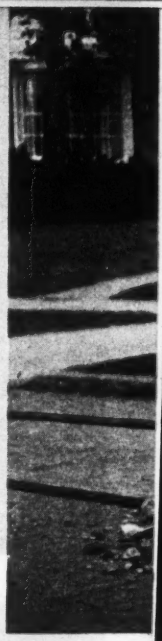
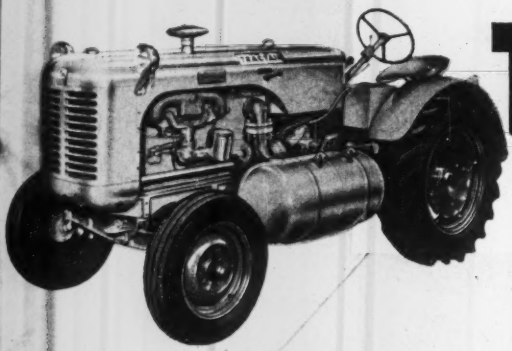
LE ROI

Le Roi gives you more for your MONEY!

more versatility
more profits

Combination bucket and crane boom. Crane boom folds back out of way when not in use. Bucket holds 10½ cu. ft. — lift capacity 1000 lbs. Crane lift capacity 800 lbs.



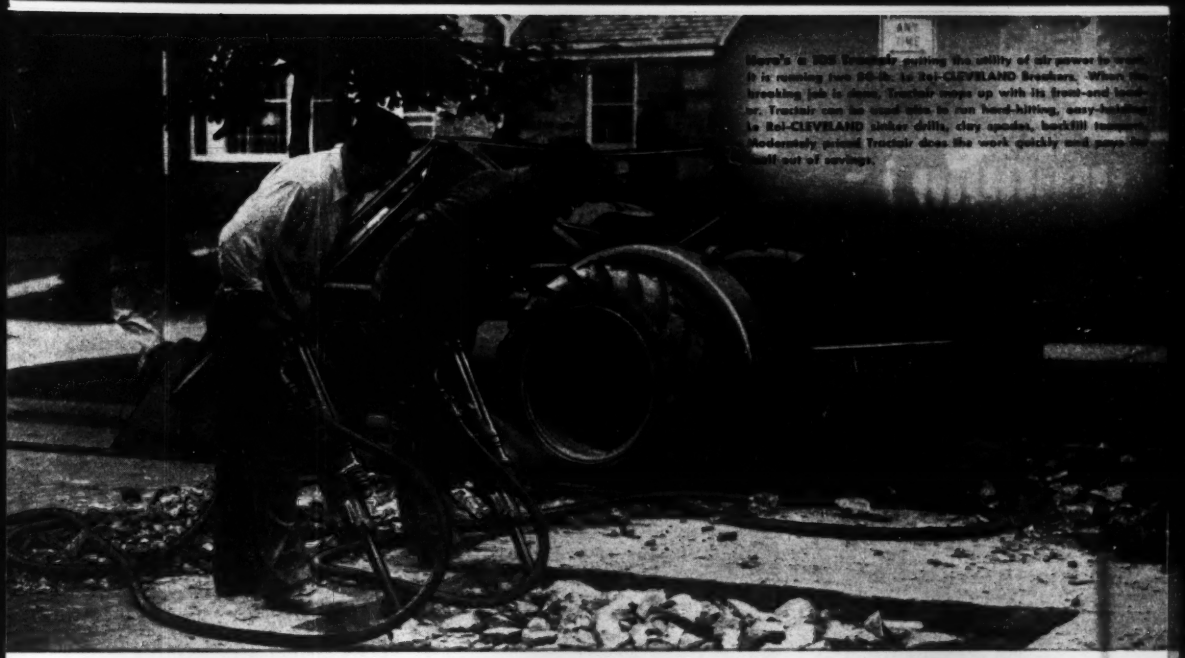


TRACTAIR

Tractair Mobildrill — a compressor and wagon drill in a single, self-contained, self-propelled unit. Universal mounting and swinging boom permits drilling at any angle. Drilling is easier and faster thanks to Le Roi-CLEVELAND air feed.

Loader with backfill blade in place of bucket. Width 6', mold board height 2'8", maximum lift above ground 1'4".

Trac-Jac consists of a Le Roi-CLEVELAND air-feed sinker drill mounted on Tractair. Feed and drilling controls are within easy reach of the operator. The mobility of this unit makes it ideal for mud-jacking and many other applications.



—Money-saving Handy Man

Combines air power and horsepower to give you greater utility for lower costs

HERE'S air power — 105 cfm — that really gets around! Good traction, low center of gravity, and Tractair's 35-hp engine give you outstanding mobility — self-propelled mobility that doesn't tie up trucks and men; mobility that saves you time and money.

That's why Le Roi Tractair can take air power anywhere any time. That's why you can make more use of work-saving Le Roi-CLEVELAND air tools to cut your costs further.

Just add a front-end loader (with its 8 quickly interchangeable accessories) and you multiply Tractair's usefulness. Not only will it handle breaking, clay digging, drilling, and tamping; but also loading, lifting, backfilling, snow-plowing, etc.

Yes, Tractair is a money-saving handy man. Watch one work — you'll see why. Make arrangements with your nearby Le Roi distributor. A new Tractair loader bulletin and job-data sheets are available. They show how Tractair saved money for others. Just write for them.

T-14

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POWER LIFT DETACHABLE GOOSENECK TRAILER

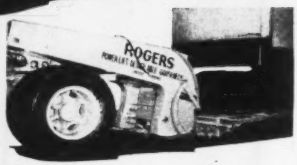
PATENTS PENDING

1 *Carries heavier loads on larger tires.*
2 *Detaches quickly for fast, easy front loading.*
3 *Stoops to clear low overhead obstructions.*
4 *Raises its deck to clear high banked crossings.*
5 *Is detached, loaded and re-attached in 5 minutes.*

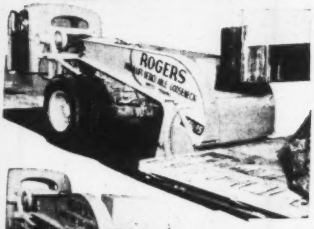
IT'S EASY AS

A B C

a Loaded trailer with deck in normal position for traveling.

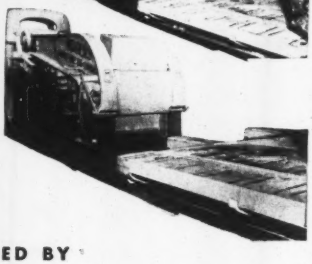


b Front of trailer being lowered by cable operated ram for quick, easy front loading. Ram is powered by the customers winch.



c Front end of trailer lowered to ground. No blocking is required under frame.

d Tractor and gooseneck moved forward for quick, easy front loading.



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The Trailer Pioneers

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Gordon E. Gaffney has been appointed secretary of the New England Road Builders Association at 70 Kilby St., Boston, succeeding the late Frederick Hoitt, secretary for more than 20 years. Mr. Gaffney's earlier career was in the newspaper field as reporter and then editor of the Lawrence Telegram and Sunday Sun. He has been city clerk of Lawrence for nine years. For the last 15 years he has supervised all the construction projects undertaken by that city.

ing superintendent of water.

Robert A. Mitchell, Philadelphia, Pa., city traffic engineer for nearly 15 years, has resigned to take charge of the traffic engineering division of Gannett, Fleming, Corddry and Carpenter, Inc., consulting engineers Harrisburg, Pa. A graduate of Cornell University, he was appointed co-chairman of the American Public Works Association a year ago. During his Philadelphia service he has proposed many traffic reforms and worked to eliminate congestion caused by parking in mid-city areas. He has been in favor of more off-the-street parking centers and warned earlier this year that if steps were not taken to provide such centers, Philadelphia merchants would lose revenue to suburban shopping centers.

Pennsylvania's Department of Health has announced the appointment of two junior sanitary engineers **James T. Fee** and **Francis P. Agulia.**

Bernard A. Lefeve has been appointed director of the bureau of highway planning in the New York State department of public works, succeeding **F. W. Fisch,** now deputy superintendent. Mr. Lefeve is a civil engineer graduate of Rensselaer Polytechnic Institute.

John B. Funk has resigned as Maryland state engineer, and will be hired as private consultant on state construction to the Board of Public Works and Department of Public Improvements He has also been appointed chairman of the Maryland Planning Commission for a term ending in 1954.

Wm. F. Neale, chief engineer of the Metropolitan district of Baltimore, Md., has resigned and is being replaced by **Chas. B. Wheeler. Roger Power** also has resigned as assistant chief engineer to be succeeded by **Clarence R. Gosnell.**

Alban P. Shaw who has served as right-of-way engineer for the Delaware State Highway Department for 15 years, is retiring. He also served for 17 years as an engineer with the New Castle County Levy Court.

Mrs. Lillian A. Derderian, who holds a master's degree in public health from the Massachusetts Institute of Technology, has been appointed acting chief of the information section of the Massachusetts Department of Public Health, Boston. She has been with the department since 1944.

T. A. Kolb, sanitary engineer with the South Carolina State Board of Health, has joined the E. I. DuPont de Nemours Co. at the Camden, S. C., Orlon plant.

Louis H. Wismar, Springfield, Ohio, has resigned as chief engineer of the bureau of construction of the Ohio Highway Department, for reasons of health, but will remain in the department in a lesser capacity.

P. E. Masheter, Columbus, formerly assistant chief engineer in the bureau, will become acting chief.

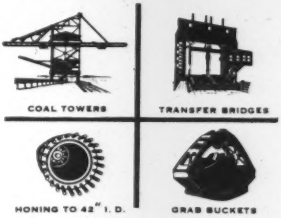
William G. Rogers, who joined the East Ohio Gas Co., Cleveland, before World War I as an engineer after having been graduated from Case Institute of Technology, has been named executive vice-president of the company. **Robert W. Ramsdell,** who received his civil engineering degree at Case in 1928, was promoted to vice-president, having served as general superintendent since 1949. Two other new vice-presidents are **George W. Horsley** and **John H. Carson,** both Case graduates.

Elbert F. Utter has been appointed engineering assistant to the manager of the Grand Central Terminal, New York City, succeeding **Frederick H. Judd** who has retired after 48 years of railroad service. Mr. Utter has been

DRIVING STEEL PILING
more than 100 feet below water

A deep pile foundation was needed for the Pettys Bayou bridge, designed to be supported by two cellular-type abutments and eight caisson-type piers. More than 8,000 linear feet of tapered steel shell piles up to 120 feet in length were driven below the water by a McKiernan - Terry Double - Acting 10-B-3 Pile Hammer. Piles were driven in pairs opposite each other, to equalize pile friction and possible tendency of caissons to shift. Powerful, fast-driving McKiernan-Terry equipment is available for every driving job. The complete line includes 17 sizes of hammers and extractors. Write for bulletin.

The photograph shows piles being driven by a McKiernan-Terry Pile Hammer for a bridge across Pettys Bayou in Ottawa County, Michigan. Luedtke Engineering Company and W. Lamb were joint contractors.



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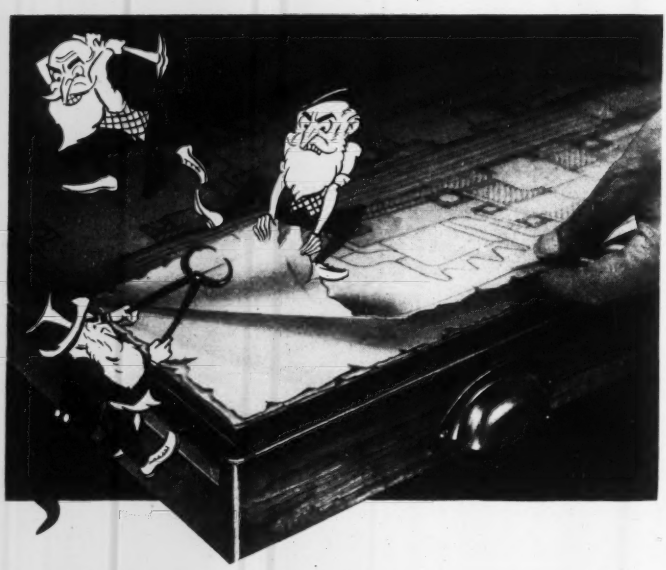

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AMERICA'S STANDARD FOR OVER 25 YEARS

in the engineering department of the Grand Central since 1915.

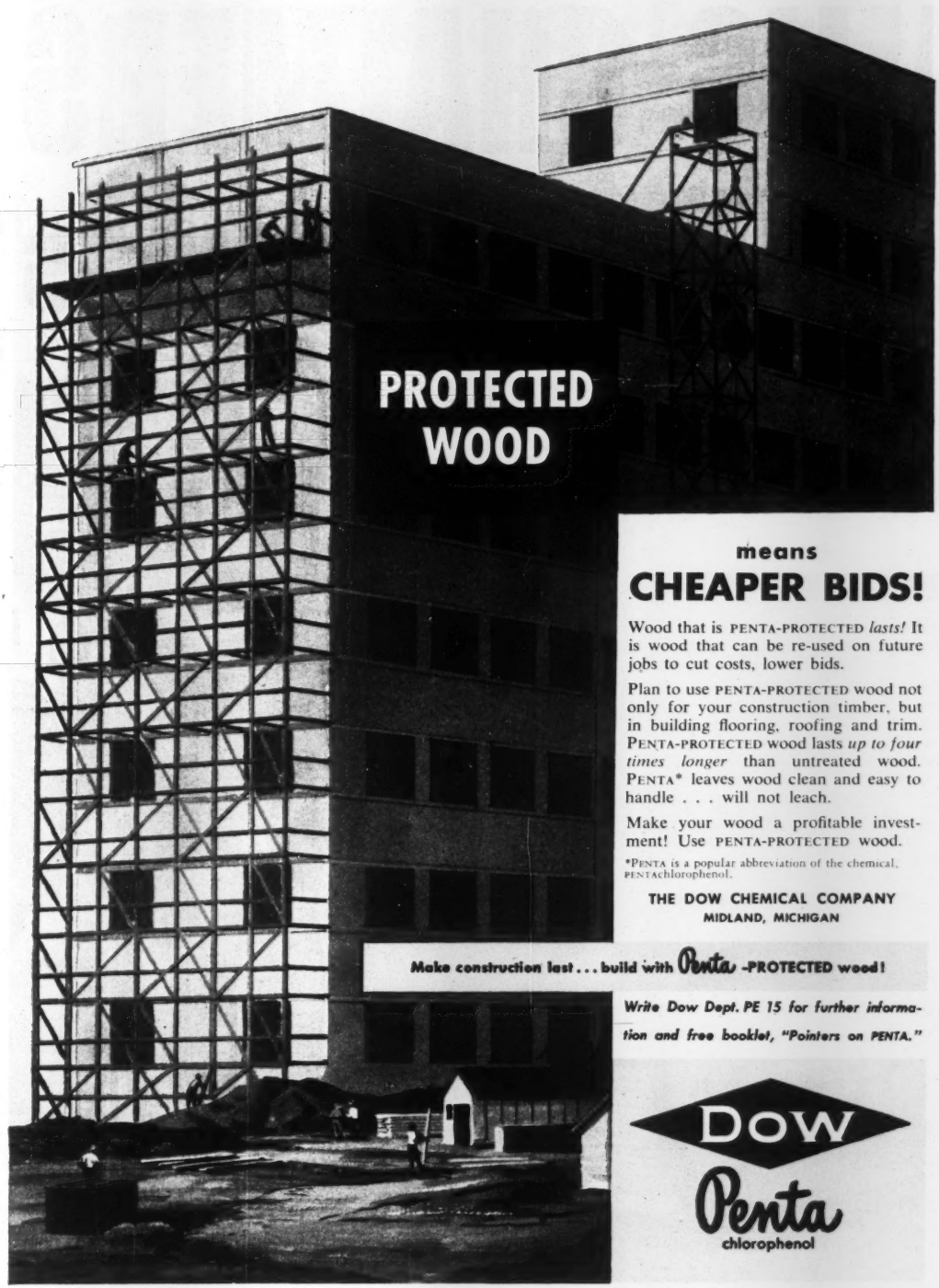
William F. Faustman, associated highway engineer in the construction department of the California Division of Highways, has retired after 39 years of state service. A graduate of Cornell University in 1914, he joined the state division of highways, and worked successively in the bridge department, the central office and the construction department. In World War I he was an engineer with the Bureau of Yards and Docks in Washington, D. C.

William A. McWilliams has been elected director of the Delaware River Crossing division of the State Highway Department. He succeeds **W. W. Mack,** retired. The new appointee has been associate director for the last year. He formerly was chief engineer of the highway department, having been named to that post in 1946 also as successor to Mr. Mack. He has been with the department since 1920, except for a four-year period of private employment. He served in both world wars, reaching the rank of colonel in World War II. The highway commissioners also reelected **M. Allan Wilson** as chief engineer.

T. R. Simpson, former senior hydraulic engineer for the California Department of Public Works, is now professor of irrigation at the college of engineering, University of California. He succeeds **S. T. Harding,** now emeritus. Simpson is a graduate of the University of California. He joined the Department of Public Works in 1920, and, under the state engineer, directed work on the inventory of California water resources. This work is being completed by his former assistants, **W. J. Schulz** and **W. L. Berry,** although Simpson retains an advisory capacity.

Frank N. Barker, head of the bureau of highway research in the division of highways of the Illinois department of public works and buildings, has been appointed chief highway engineer to succeed **C. M. Hathaway,** resigned.

Robert L. Brown has been appointed chief of the construction-engineering division of the Kentucky Area office of the Atomic Energy Commission. He has been with the AEC since 1947. He attended Georgia Tech and has engineering degrees from the University of Mississippi. He was with the St. Louis district, Corps of Engineers, 1943-47, directing studies for reservoirs and relocation of towns and facilities to be inundated by dam construction.



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175 net engine hp.
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102 drawbar hp.
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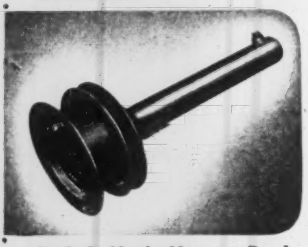

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Steel tagline holds magnet steady and absorbs the load . . . protective slack is maintained in expensive magnet cable to avoid jerking, pulling loose at the terminals or snagging.

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steadies your clamshell buckets. Provides ample coil spring power at all boom angles to keep bucket lined up with the work. Makes more loads per day easier. Rud-O-Matics are foolproof, trouble-free. Eight sizes meet all requirements. Available immediately. *For full information see your dealer — or mail coupon below.*

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EDUCATION and RESEARCH

Use B.C. harbor model for hydraulic studies

A 23-ft hydraulic working model of a British Columbia harbor is being constructed to study the effects of mixing salt and fresh waters, sewage disposal and results of proposed dredging operations, all having important implications in the fishing industry.

The model, based on the harbor of Alberni on Vancouver Island, is being constructed by the Pacific Biological Station of the Fisheries Research Board of Canada. It is due for completion by May 30 of this year.

Horizontal scale of the model is 1-ft to 1,000, and vertical scale is 1-ft to 84.

Bed of the model is concrete and provision has been made to place sand in the erodible areas so that scour and silting can be studied.

Educational Notes

Cornell laboratory—Workmen have begun clearing ground for a $1,700,000 engineering laboratory at Cornell University, Ithaca, N. Y., reports Dr. Cornelius W. DeKiewiet, acting president.

Jobs in the South—Engineering graduates have good job opportunities in the South, with rapid industrialization, says President John M. Gallalee of the University of Alabama. About 57 percent of Alabama engineering graduates last year found jobs in the state. Another 13 percent were employed in the South, whereas formerly only 20 percent stayed there.

Research council—Four additional educational institutions have been elected to active membership in the Engineering College Research Council of the American Society for Engineering Education. They are California Institute of Technology, Dartmouth College, Montana State College, and the University of Toledo.

Plenty of jobs—In 1950 students of the Polytechnic Institute of Brooklyn, N. Y., had a choice of almost 5,000 openings offered by more than 800 companies. All of the 699 men who received diplomas in the graduate and undergraduate school last June, with the exception of those in military service, were placed soon after graduation. The U. S. Department of Labor says that mobilization has increased the demand for engineers so much that employers are seeking additional personnel, after absorbing the engineering schools' record 1950 graduating classes of 50,000.

Research scholarships — Scholarships for research have been established by the Canadian Construction Association for engineering university students who in their final year write a thesis on a construction topic. The prizes of $300, $200 and $100, are open to Canadian university engineering students, with theses to be written on any aspect of building. One condition is that $50 of the money is to be spent on buying technical books.

Protective coatings—A new research laboratory at the engineering experiment station of the Georgia Institute of Technology is studying protective coatings for Southern pine and other materials of construction. Latest efforts are in the investigation of the newer plastic and resin coatings and synthetic vehicles for pretreatment of wood to improve "paintability".

Course revisions—At the University of Detroit college of engineering about 250 course revisions have been completed. A number of additional options also have been introduced into the senior year in several of the curricula in order to adjust the courses to changes and trends in engineering practice and in industry and to utilize more fully the staff and laboratory resources of the college.

Building research—An international conference on building research was held recently in Geneva, Switzerland. It was called by the housing subcommittee of the United Nations Economic Commission for Europe to determine how international collaboration can help. An International Council for Building Documentation is providing countries and experts with up-to-date documented information from all known sources on building research and experience.

Engineering fellowships — Establishment of a series of fellowships to enable Canadian engineering graduates to go to Britain for up to two years of post graduate training has been announced by the British government. Possibly 38 fellowships will be awarded annually. Candidates will be awarded annually. Candidates will be chosen by selection boards to be set up in Canadian universities.

"House of Tomorrow"—Researchers at the University of Texas have begun a $300,000 search for a dream house, incorporating in it the best features of six experimental dwellings now

(*Continued on page 85*)

You pay for a MOSAIC TILE FLOOR—why not have one?

Floors which require constant maintenance eat up many times their original cost in upkeep expense.

Why endure this needless cost? Floors of Mosaic Carlyle Quarry (Real Clay) Tile shrink maintenance cost as much as 50%, according to building managers.

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And, where food is processed or handled, *sanitation* is assured. Fats, greases, organic acids and other spillage do not penetrate the surface—can be easily maintained with mop, cloth or hose.

Unlike most floor materials, Mosaic Carlyle Quarry Tile is at home in cold storage rooms; as exterior walkways and store fronts; on commercial kitchen and cafeteria floors, and in countless other areas where beauty, economy and rugged durability are essential.

See for yourself how Mosaic Tile *saves* more while it *serves* better. We have a tile to meet the most exacting specification for practically any use. Consult your architect, builder, tile contractor, or write Dept. 26—1, The Mosaic Tile Company, Zanesville, Ohio, for more facts about this budget-stretching material.

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You save on maintenance because the flexible-tight Dresser line "lives in the ground" comfortably and because modern glass-smooth linings assure high-sustained carrying capacity, life-long service.

See your Dresser Sales Engineer, or write today for literature.

In Springfield, Mass., as many as 40 long lengths of pipe were laid and joined in an eight-hour day, using a two-man joining crew.

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under construction in Austin. The project is sponsored by the Acme Brick Co. of Fort Worth, and the houses are being built by the Coates Co. of Austin. Comfort is to be featured. Several types of foundation are used. Under main observation is a honeycomb tile type. Active in the work are Professors Raymond N. Dawson, Wayne E. Long, and F. E. Giesecke. They have tried to develop systems to take advantage of brick and tile characteristics. They heat or cool the ceramic materials by spraying water on them, piping it through them, or by passing air over them.

Engineering magazine—A new magazine, "Florida Engineer," is being published quarterly by engineering students of the University of Florida, Gainesville.

Speed up—Rensselaer Polytechnic Institute will accept a freshman class now so that students who finished high school in January may complete an entire year of college work before next September. And the Newark College of Engineering will open freshman classes for both day and evening students this month. The moves are motivated by the present need for technically trained men in defense and the armed forces. Also Navy veterans want to take advantage of G I benefits before the terminal date of July 25th next.

Engineering advisory council—At Queens University, Kingston, Ont., an advisory council for engineering has been set up to bring the engineering faculty closer to industry and engineering practice. It consists of 24 engineers and its objectives are to provide a closer link between graduates and staff, to give industry a channel to express its ideas, desires and opinions to a group that will hear and cooperate, to suggest problems in research, and to encourage graduate study.

Laboratories building—The recently completed alumni scientific laboratories building at Drexel Institute of Technology, Philadelphia, will double the space for civil engineering work. More than 2,200 engineering students are enrolled in Drexel day classes and 1,300 for evening courses.

Prize winner—Karl T. Compton, chairman of the Corporation of Massachusetts Institute of Technology, has been awarded the 1950 Hoover Medal for "distinguished public service", and he has also been named to receive the first award of the $1,000 William Procter Prize for scientific achievement.

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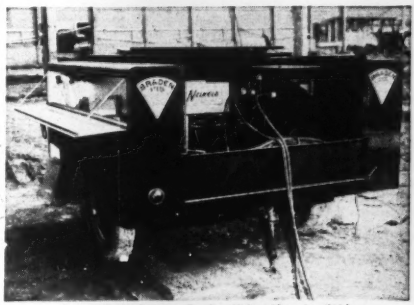

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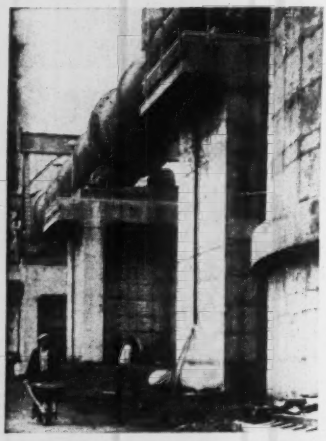

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Kansas City, Mo.	Metuchen, N. J.
Minneapolis, Minn.	Charlotte, N. C.
Milwaukee, Wis.	Decatur, Ga.
Ft. Wayne, Ind.	Dallas, Texas
Pittsburgh, Pa.	Los Angeles, Calif.
Springfield, Mass.	Denver, Colo.

MEETINGS

The Geneva Builders and Trades Association, Inc., Geneva, N. Y., is being reorganized to solve problems which confront building there. It hopes to bring within its scope all responsible firms and individuals associated with the industry.

Hugh B. Henry, TVA civil engineer, has been elected president of the Knoxville, Tenn., sub-section of the ASCE. He succeeded Henry B Aiken, professor of civil engineering at the University of Tennessee. Alfred J. Cooper, Jr., hydraulic engineer with TVA, was named secretary-treasurer.

Wm. O. Taylor has been elected president of the Associated Pennsylvania's Constructors. S. Howard Brown is chairman of the executive committee. Elected to the advisory board were John Bruns, John Swanger, Jr. and T. V. Good.

Thomas D. Jolly, vice-president of the Aluminum Company of America, in charge of engineering and purchases, has been elected president of the American Standards Association. Harold S. Osborne, chief engineer of the American Telephone and Telegraph Co. has been re-elected vice-president of the association.

A. L. R. Sanders, chief engineer, Hazelet and Erdal, consulting engineers, Chicago, has been reelected president of the Illinois section of the American Society of Civil Engineers. He has been serving as president to fill the unexpired term of the late O. K. Jelinek. Other new officers are: H. F. Peckworth, director of the American Concrete Pipe Association, first vice president; F. W. Edwards, head of the Civil Engineering Department, Illinois Institute of Technology, second vice president; and Henry Miller, consulting engineer, treasurer. H. F. Sommerschield, Portland Cement Association, is secretary.

Milton J. Brock has been elected president of The Home Builders Institute of Los Angeles. Mark A. Thoreson, first vice-president; E. Avery McCarthy Jr. second vice-president; Arthur C. Wright, third vice-president; William H. Evans, treasurer.

Allan K. Booth, associate professor of mechanics at Rensselaer Polytechnic Institute, is the new president of the Mohawk-Hudson Chapter of the American Society of Civil Engineers. Other officers: Vice-president, Prof. Henry G. Harlow, head of the civil engineering department at Union College; secretary, Belmont Williams, assistant designing engineer, State Public Works Department; treasurer, Holbert W. Fear, assistant district engineer, U. S. Geological Survey.

G. A. Rosa of Fort Bragg, N. C., was elected president of the Cape Fear Engineers Club. He succeeds L. C. Kerr of Clinton, N. C. A. T. Hight of Fayetteville was elected vice-president, and C. I. Burkhead, also of Fayetteville, was elected secretary-treasurer.

W. W. Adkins of Asheboro elected chairman of the North Carolina Section of the American Water Works Association and the North Carolina Sewage Works Association succeeding E. R. Tull of Rockingham. H. F. Davis of Charlotte was elected vice-chairman; E. C. Hubbard of Raleigh, was named secretary-treasurer; and W. F. Stokes of Hendersonville, trustee.

CALENDAR

National Council for Stream Improvement, Inc., annual meetings, The Waldorf-Astoria, N. Y. City, Feb. 19-22.

Illinois Annual Conference on Highway Engineering, Urbana, Ill., Feb. 20-22.

American Concrete Institute, St. Francis Hotel, San Francisco, Calif., Feb. 20-24.

Industrial Waste Conference, Purdue University, La Fayette, Ind., Feb. 21-23.

American Society of Civil Engineers, convention, Rice Hotel, Houston, Texas, Feb. 21-23.

Associated General Contractors of America, annual convention, Hotel Statler, Boston, Mass., Feb. 26-March 1.

Midwest conference, Building Officials and Inspectors, Purdue University, La Fayette, Ind., Feb. 26-28.

American Concrete Pipe Association, Waldorf-Astoria Hotel, New York City, March 1-3.

American Society for Testing Materials, spring meeting, Netherland-Plaza Hotel, Cincinnati, Ohio, week of March 5.

American Road Builders Association, Schroeder Hotel, Milwaukee, Wis., March 12-14.

American Railway Engineering Association, Chicago, Ill., March 13-15.

N. J. Sewage and Industrial Wastes Association, Haddon Hall Hotel, Atlantic City, N. J., March 14-16.

Structural Engineering Conference, University of Florida, Gainesville, Fla., March 16-17.

N. Y. State Association of Highway Engineers, Rochester, N. Y., March 28-30.

N. J. Society of Professional Engineers, Haddon Hall, Atlantic City, N. J., Apr. 6-7.

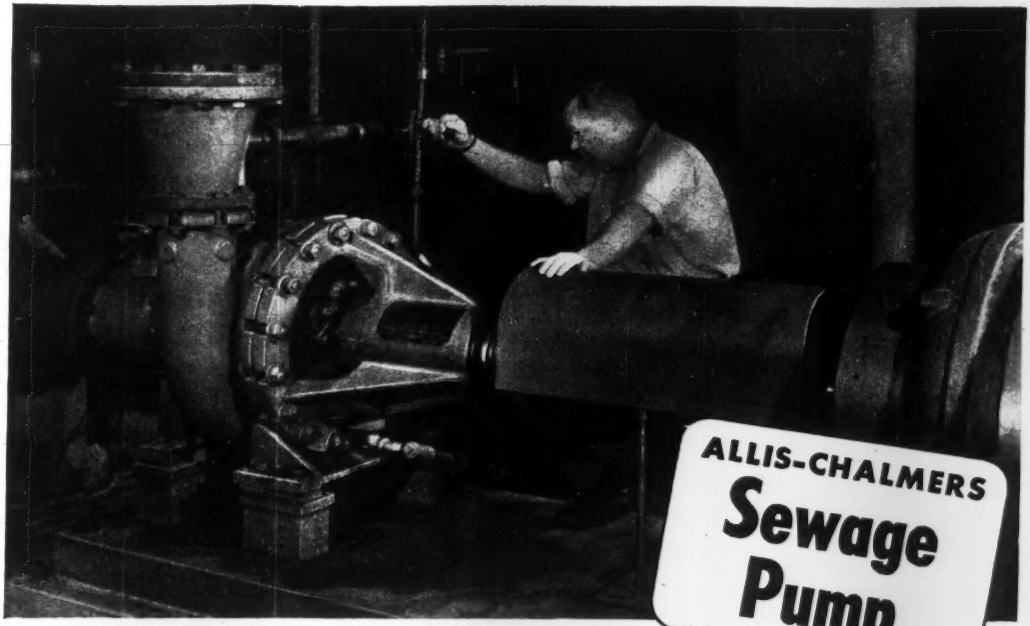
Concrete Reinforcing Steel Institute, annual meeting, The Homestead, Hot Springs, Va., April 16-21.

American Water Works Association, annual conference, Miami, Fla., April 29-May 4.

Materials Handling Exposition and Conference, International Amphitheater, Chicago, Ill., April 30-May 4.

California Sections, American Society of Civil Engineers, The Ahwahnee, Yosemite National Park, Calif., May 3-5.

Non-Clog Design Keeps Sewage Flowing



WIDE IMPELLER OPENINGS, ROUNDED IMPELLER INLETS PASS SOLIDS FREELY— KEEP PUMPING EFFICIENCY HIGH

WHAT DO YOU look for in sewage pumps? A pump that can "take it"? Continuous high operating efficiency? Easy Maintenance? Read below how Allis-Chalmers new "SW" pump gives you all three — in standard sizes up to 10,000 gpm.

Wide, rounded impeller passages are specially designed to make way for free-flow of solids . . . keep pump efficiency high. There's an extra heavy heat treated carbon steel shaft—heavier than in ordinary sewage pumps. Shaft sleeves are hardened stainless steel . . . anti-friction bearings are extra large, adjustable axially by external means.

Pump can be mounted horizontally or vertically. Wear-resistant casing is split radially so that you can remove the rotating element in a matter of minutes (intake or discharge piping does not have to be disturbed)!

Want *all* the facts? Get details from bulletin 08S7504. Call your A-C representative today, or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-3270

ALLIS-CHALMERS

Texrope is an Allis-Chalmers trademark.

World's Widest Range of Public Works Equipment

Rigged with husky wire rope, power shovel takes huge bites of earth during rough grading.

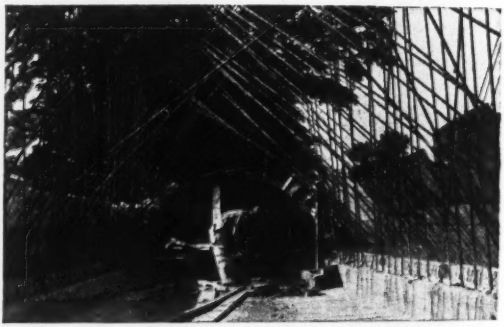
Drill steel paves the way for blasting, to remove barrier of rock.

5 Miles of Relocation on U.S. 122

To cope with a steadily-mounting volume of traffic north of Reading, Pa., approximately five miles of U. S. Route 122 were recently relocated between Leesport and Hamburg. The new stretch of highway has two 24-ft lanes, separated by a 4-ft concrete divisor. Its construction included the erection of a bridge, a reinforced-concrete arch, and three culverts. Contractor for the project was C. W. Good, Inc., Lancaster, Pa. Bridge reinforcing, bar mats and dowel units were supplied by Bethlehem.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation



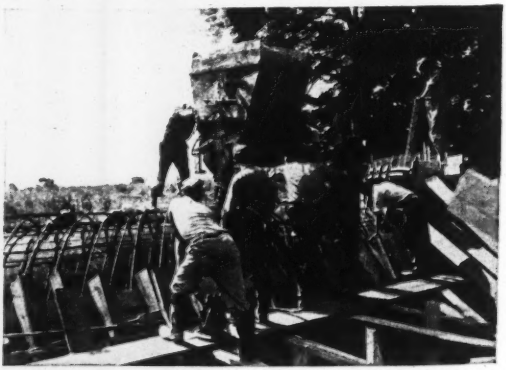
Network of Bethlehem Reinforcing Bars, shown in place in one of three culverts. The entire project used more than 100,000 lb of reinforcing bars.

STEEL FOR HIGHWAYS

Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail Guard Rail Posts • Wire Rope and Strand • Pipe Hollow Drill Steel • Spikes • Bolts and Nuts Timber Bridge Hardware • Tie-Rods Sheet- and H-Piling • Fabricated Structural Steel

BETHLEHEM STEEL

The 5-mile stretch of highway includes a reinforced-concrete arch, which is shown above. Rough grading for the new roadway completed in background.



With Bethlehem Reinforcing Bars bent to shape and securely tied, bucket of concrete is brought into position for initial pour. Crew stands ready.

OBITUARY

Walter Geist, 56, president of Allis-Chalmers Mfg. Co., died at Milwaukee, Wis., Jan. 29. In his youth Geist studied in night school to advance in the company from errand boy to draftsman. Before he was 30 he developed a multiple V-belt power transmission system for textile industries, an invention that revolutionized textile manufacturing and is said to have earned an estimated $30,000,000 for his company.

Ellis Wing Taylor, 63, structural engineer and designer of some of Southern California's largest aircraft plants, died recently in Arcadia, Calif. He designed the Douglas factory at Long Beach and the Consolidated plant at San Diego, and was called to England in 1936 as consulting engineer for construction of plants there. A graduate of the University of California in 1912, he also studied at Columbia.

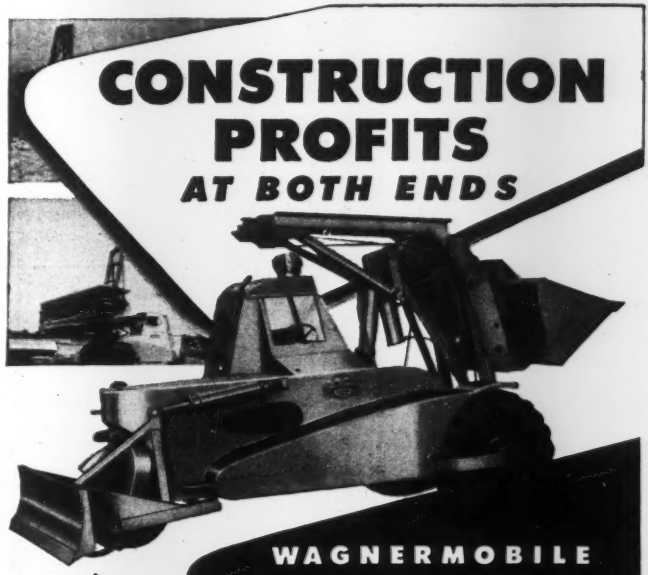
Andrew A. Canfield, 69, an associate construction engineer with the N. Y. State Department of Public Works, died at White Plains, N. Y., Jan. 27

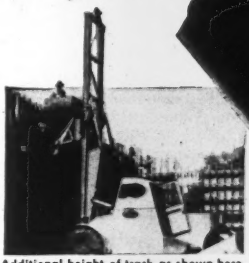
John Dryshpel, 67, a senior engineer of the N. Y. City Board of Transportation, who planned and designed the Independent subway system and the proposed Second Ave. subway, died Jan. 30. Born in Russia, he got his civil engineering degree at Cooper Union in 1914.

William S. Conant, 83, a retired construction engineer, died Jan. 24 in Washington, D. C. Mr. Conant served with the World's Columbian Exposition at Chicago in 1893 before going to Detroit as a construction engineer. In World War I he was a lieutenant colonel. He was a graduate of Princeton University.

Chester E. Wheeler, 59, chief planner of the Westchester County, N. Y., planning commission and a pioneer in the development of the county's parkway system, died in Scarsdale, N. Y., Jan. 29. He was a 1914 graduate of the University of Massachusetts. He was an Army lieutenant in World War I and had joined the staff of the Bronx River Parkway Commission in 1915. He did detail layout and design for that first of Westchester County's network of express highways.

George P. Hayes, 45, of Havelock, N. C., former assistant superintendent of the Duke Construction Co., died Jan. 19.





Additional height of track as shown here makes the Duo-Way a versatile profit-maker.

Scoop lifts to a height of 14 ft. and track tilt of 10° makes loading easy.

Big 84-inch dozer blade with 8000 lbs. down pressure levels land on this job. Scoop at other end can be filled for ballast.

SCOOP AT ONE END . . . . . DOZER AT THE OTHER

Power-packed, all hydraulic controlled, the Wagnermobile Duo-Way Scoop cuts operating costs. Saves in both labor and equipment. Four big operations in one . . . loader, dozer, truck and tractor.

Big 84-inch dozer blade dozes out a bank . . . 1 cubic yard scoop at the other end scoops up dirt, lifts it and loads it. All by one machine—Wagnermobile Duo-Way Scoop

Wagnermobile Special Features:

- Driver in side saddle position has all around vision . . . perfect control.
- Planetary drive . . . rugged "extra" power.
- Improved hydraulic controlled track and dozer.
- Special tilt control track tilts 10° back, 10° forward.
- Top section folds down to 9 ft. 6 in. for low road clearance.
- Highway speeds up to 20 mph.
- 4 speeds forward, 4 speeds reverse.
- Complete assortment of attachments for versatility.
- Wagnermobile Duo-Way Scoop is designed for top performance. Job tested for more profit on every job.

Write for literature and address of your nearest dealer.

We reserve the right to make improvements in design and specification without notice.

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PILE-SOCKING POWER
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SUPER-VULCAN
OPEN TYPE
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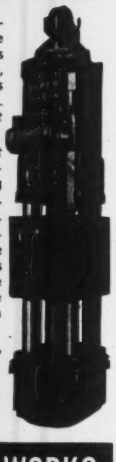
PILE HAMMERS
18C, 30C, 50C and 80C



- Super-Vulcan's terrific impact drives piles down double quick. Super-Vulcan delivers twice the blows per minute, enables you to start jobs faster, finish them up sooner. All this on 25 to 35 per cent less steam.

Users from coast to coast get more dependable performance and longer pile-driving service from Super-Vulcan.

Rugged strength—simple design—positive action—durability—compactness—all are important features. What's more, the open type fits the same leads and uses the same accessories as the Vulcan Single-Acting pile hammer.

Investigate the super-powerful, money-saving Super-Vulcan.

Write for details today.

Sizes: 18C-30C-50C-80C meet all needs.

VULCAN IRON WORKS
331 North Bell Avenue
Chicago 12 ... Illinois

UNIT PRICES BID BY CONTRACTORS

Divided highway, viaduct, Allegheny Co., Pa.

A low bid of $2,761,657.42 was only 0.8% below the next to low bid received by the Pennsylvania State Highway and Bridge Authority, Dec. 8, 1950, on 2,763 feet of divided Penn-Lincoln Parkway and viaducts in Allegheny Co. Five bidders were 8.5% apart.

The work is in Carnegie, adjacent to a railroad. It includes furnishing labor, materials and equipment for the construction of approximately 851 feet of divided highway, a concrete divisor area 4 feet wide, and 3 concrete deck plate girder and I-beam viaducts. The job also calls for the construction of approach ramps, 18 feet and variable in width, a reinforced concrete retaining wall and one plate girder viaduct. Work must be completed in 170 days.

Minimum heavy equipment includes 8 pile driving outfits and power cranes, 4 construction mixers, a 10-ton and a 3- to 6-ton power roller and a paving mixer. Wage rates are: common laborers, $1.60 an hour; semi-skilled, $1.65-$2.15; cement finisher, $2.05; operating engineers, $1.70-$2.55; and truck drivers, $1.70-$1.93.

Bidders were:

1 Dinardo, Inc., Pittsburgh, Pa. (Contract)	$2,761,657.42
2 Dick Construction Co., Pittsburgh	2,783,894.48
5 John F. Casey Co., Pittsburgh	2,997,546.19

Items	Quantity	Unit prices 1 C	2
Excav Class 1 ... cy	502	$2.00	$2.00
Class 2 ... cy	5,575	8.00	7.00
Borrow ... cy	3,470	1.00	2.00
Subgrade ... sy	32	0.50	1.00
Spec subgrd ... sy	9,298	0.90	0.70
Shoulders ... lf	1,281	0.40	0.75
Crush agg base cors, type A, 8" deep ... sy	34	2.50	5.00
10" ... sy	105	2.75	5.00
Agg No. 2B ... cy	8	5.00	10.00
Selct matl surf ... cy	30	6.00	10.00
Plain cem conc base cors, typ A, 6" deep ... sy	91	5.40	5.00
Cem conc pav, 6" deep, plain ... sy	142	5.40	5.00
9" reinf ... sy	2,240	5.75	7.00
10" reinf ... sy	4,613	6.25	7.30
Relaid block pav (hr) ... sy	91	5.00	5.00
Bit surf cors HSD or ID-2, 2½" deep ... sy	128	2.75	3.00
Conc, cl A ... cy	4,287	70.00	80.00
cl A (stone agg) ... cy	4,909	72.50	70.00
cl B ... cy	3,335	63.00	60.00
Re bars ... lb	1,903,703	0.14	0.11
Fab struc st ... lb	6,372,000	0.20	0.192
Conc test piles 2 ea 62' & 2 ea 68' ... ls	...	4,400	4,800
2 ea 62' ... ls	...	2,800	3,000
5 ea 62' ... ls	...	4,620	5,040
6 ea 32' & 4 ea 38' ... ls	...	5,225	5,700
Conc piles 14" ... lf	42	7.50	8.40
20" ... lf	460	6.90	7.50
26" ... lf	936	5.80	6.30
32" ... lf	1,568	5.50	6.00
38" ... lf	494	5.50	6.00
44" ... lf	704	5.50	6.00
50" ... lf	1,650	5.50	6.00
56" ... lf	1,792	5.50	6.00
62" ... lf	2,480	5.50	6.00
68" ... lf	816	5.80	6.30
Cem conc pav for stream bed, Class B, 6" ... cy	19	40.00	50.00
Manhole Typ A ... ea	1	325.00	350.00
Inlets typ J ... ea	3	300.00	250.00
Typ 4' spec ... ea	6	300.00	250.00
Inlets & sump, typ E ... ea	5	300.00	250.00
Typ H ... ea	1	300.00	450.00
Typ 4' ... ea	1	300.00	300.00
Inlet, typ E, with stench chamber ... ea	1	500.00	400.00
Typ 4' spec ... ea	3	500.00	500.00
Rebldt mnhole ... vf	4	30.00	50.00
Inlet cast typ H ... set	1	100.00	125.00
Asphlt coat corrg metl p, 15" ... lf	84	4.00	3.50
18" ... lf	200	4.25	4.50
Re cem conc p, 18" ... lf	254	5.00	4.50
Plain cem conc, 12", or vit clay pipe ... lf	252	4.00	3.00
Vit cl p, tripl stg, 12" ... lf	132	5.00	4.00
Fndn underdr, typ A, 6" backfill, typ I ... lf	312	2.50	2.50
Typ 11 ... lf	390	2.50	2.50
Pl cem conc gut, typ C ... sy	38	6.00	6.00
Curb gutter typ B ... sy	688	6.00	6.00
Curb, typ B, white conc reflect ... lf	1,702	2.50	3.00
plain cem conc ... lf	842	3.00	3.00
Cem conc sidewalk ... sy	225	5.75	6.50
Guard fence, typ 1-B ... lf	1,600	1.25	1.25
Typ 1-C ... lf	128	1.15	1.25
End anchorage typ C ... ea	1	55.00	75.00
Metl railing ... lf	3,700	10.50	9.00
Guard fence conn ... ea	10	50.00	30.00
Cop conductor pipe ... lf	1,020	4.00	4.00
Elec conduit 1½" ... lf	64	1.50	3.00
2" ... lf	4,799	1.85	3.00
Junct box ... ea	21	110.00	150.00
Blast plate ... sf	1,520	6.00	5.00
Fndn column, 12' dia ... lf	248	165.00	400.00
14' dia ... lf	169	235.00	475.00

Tunnel, Columbia Basin

The $2,175,315 low bid for West Canal-Frenchman Hills Tunnel, Columbia Basin Project, Wash., was 9.5% below the engineer's estimated $2,381,844. The 14 bids received by Bureau of Reclamation, Dec. 13, 1950, were priced 45.9% apart with the low bid 2.4% below the next lowest.

The work is situated some 20 miles south of Quincy, Wash. The job includes excavation of the inlet and outlet channels of the canal and construction of 1.77 miles of concrete-lined tunnel. The contractor will furnish all materials required for construction. The government will provide the right-of-way for access to the job over routes established by the contractor.

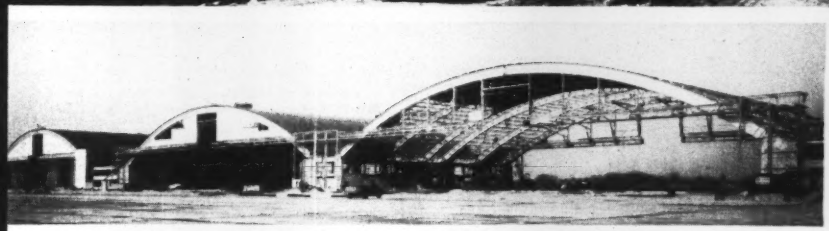
Completion is scheduled for 1000 days with a penalty of $100 per day for each day's delay. Minimum wage rates are: carpenters and cement finishers, $2.20 an hour; ironworkers, $2.25-$2.30; power equipment operators, $1.75-$2.70; laborers, $1.60-$2.15.

Bidders included:

1 United Concrete Pipe Corp. & Ralph A. Bell, Baldwin Park, Cal. (contract)	$2,175,315
2 Peter Kiewit Sons Co., Omaha, Neb.	2,227,605
14 Macco Corp., Paramount, Cal.	3,175,475
Engineer's estimate	2,381,844

Items	Quantity	Unit prices 1 C	2
Excav, canal, comm ... cy	160,300	$0.50	$0.40
Rock ... cy	7,100	3.00	2.50
Excav, all classes, Tunl cy	77,100	16.80	18.25
Tunl enlarg ... cy	100	30.00	26.00
Backfill ... cy	500	1.00	1.50
Compact backfl ... cy	400	4.00	1.75
Pav, dry-rock ... sy	220	4.00	7.00
Perm sty-st tunl sup, t ... lb	708,000	0.14	0.13
Perm timber in tunl, erect ... Mbm	255	200.00	200.00
Tunl roof sup bolt, i ... lf	5,600	2.00	3.00
Drill feelr or pilot holes ahead of tunl excav ... lf	900	2.00	1.25
Drill grout hole ... lf	900	2.50	1.75
Grout pipe, con, p ... lb	900	1.50	0.50
Pressure grout ... cf	9,000	2.00	1.75
Concrete in portal struct, transt ... cy	360	57.00	54.00
In tunl lin'g ... cy	20,250	20.00	16.50
Reinf bars, p ... lb	62,000	0.12	0.12
Cement, handl ... bbl	30,900	5.00	6.25
Blast filler, p ... sf	50	2.50	1.50
Wp p in tunl lin'g, i ... lb	500	0.60	0.25

HUGE STEEL-ARCH HANGARS go up fast!



▲ Principal roof members are curved, riveted plate girders. Pinned at supports and crown, they have a constant depth, back to back of flange angles of 5 ft. 7 in. and rise 49 ft. 11 in. to provide a clear height at center of 75 ft.

◀ Interconnected by 2-story steel frame lean-tos ranging in width from 39 to 103 ft., the hangars form a building 1,148 ft. long and 219 ft. wide. Each hangar provides a 300 ft. clear floor space.

302′ Steel-Arch Spans SIMPLIFY ERECTION . . .

PROVE MOST ECONOMICAL TYPE OF CONSTRUCTION

PROJECT: Three hangars and interconnecting lean-tos at New York International Airport, Queens, New York City.

DESIGNED BY: Port of New York Authority, Roberts and Schaefer Company, Consulting Engineers. Lorimer and Rose, Associate Architects.

GENERAL CONTRACTOR: Stock Construction Corporation.

STRUCTURAL STEEL: 3,600 Tons. Fabricated and erected by American Bridge Company.

Erected in 13 months (complete with heating, fire-alarm and lighting systems) the three giant, 300′-wide, 21′′-long hangars with interconnecting 2-story lean-tos have set a record for this type of construction—both as to length of spans and speed of construction.

Erected in four sections, the 302′-steel arches are pinned at the supports and crown to provide a clear height at the center of 75 ft. Each hangar is large enough to accommodate 6 Douglas DC-6 transports or four double-deck Boeing Stratocruisers. In addition, parking aprons on both sides of the building can take 15 aircraft of the type having a turning circle of 175 ft., or 19 of the smaller type having a turning circle of 150 ft.

The decision to use long panels between solid web steel arches for this important project was made after studied consideration of other types of construction materials. And again steel proved most economical by meeting all comers in competitive bids.

If you'd like to know more about the advantages of American Bridge Company *fabricated* and *erected* steel construction, just call our nearest office.

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

Contracting Offices in: AMBRIDGE · BALTIMORE · BOSTON · CHICAGO · CINCINNATI · CLEVELAND · DENVER · DETROIT · DULUTH · ELMIRA · GARY · MINNEAPOLIS · NEW YORK · PHILADELPHIA · PITTSBURGH · PORTLAND, ORE. · ST. LOUIS · SAN FRANCISCO · TRENTON

UNITED STATES STEEL EXPORT COMPANY, NEW YORK

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AMERICAN BRIDGE

UNITED STATES STEEL

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager **J. A. MAHONEY, Reports** **M. R. ROESSLER, Statistics**

NEW ENGLAND

BIDS ASKED—BUILDINGS

† **Mass., Camp Edwards**—COLD STORAGE—B.A. 2/20—U. S. Eng., P. O. Box 2316, Boston, Zone 7, Cold Storage Bldg. No. T 3451 addn., alterations, ENG 19-016-51-40.

Mass., Marblehead — HOSPITAL — B.A. 2/23 — Town, Town Clerk, Mary Alley Hospital, Kents Corner Sect., $370,000. Plans deposit $25, Charles R. Wait Assoc., 27 State St., Boston, archts. CD 11/29.

▲ **Mass., Springfield**—HOSPITAL—B.A. 2/23—Wesson Maternity Hospital 120 High St., hospital, $1,250,000, Voorhees, Walker, Foley & Smith, 101 Park Ave., New York 17, N. Y., archts. CD 11/1.

LOW BIDDERS—HEAVY CONSTRUCTION

Truscon Steel Co., 1315 Albert St., Youngstown, O. Low Bidder, **$73,992**, by mat. reinforcement, c. conc. East Hartford-Glastonbury Expressway, Hartford, CONNECTICUT. State Hy. Comn., Hartford, Conn. Bids Jan. 24.

LOW BIDDERS—BUILDINGS

▲ **Tocci Bros. Constr. Co.**, 38 Colonial Ave., Newton, Mass. Low Bidder, **$1,081,130**, HIGH SCHOOL addn., alterations, STOUGHTON, MASS. Town, School Bldg. Comn., Stoughton, Mass. Bids Jan. 25. CD 1/11.

CONTRACTS—BUILDINGS

Paul Livoli, 922 Belmont St., Watertown, Mass. Contract Awarded. $909,682, veteran's HOUSING, Proj. 200-2, Melendy Ave. and Quimby St., WATERTOWN, MASS. Town of Watertown Housing Auth., Watertown, Mass. CD 1/15, under LB.

M. Cooper, 521 Fifth Ave., New York, N. Y., Contract Awarded, **$700,000**, seventy-eight 1 story, 24x32 ft. RESIDENCES, WATEBURY, CONN. Montoe Park, Inc., c/o contractor.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

Pa., Phila.—B.A. 2/19—Dpt. P. Wks., City Hall Annex, Frankford Creek flood control project between Torresdale Ave. and Penna. R. R. A. Zane Hoffman, c/o owner, ch. engr. CD 1/30/46.

† **Maryland**—B.A. 2/20—At office H. J. Spelman, div. engr. Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington, Va.

Anne Arundel Co.—two rein.-con. rigid-frame structures, approaches 0.047 mi. in Fort Meade area, Baltimore-Washington Parkway. Proj. 1G3. Plans deposit $10.

N. Y., New York—B.A. 2/20—Bd. Water Supply, 120 Wall St., Zone 5, Contr. 423, furnishing, testing, del. two 6x14 ft. Broome type sluice gates; 8 stop shutter frames weighing approx. 150,000 lbs.; 8 stop shutters weighing approx. 70,000 lbs.; a stop shutter lifter weighing approx. 1,000 lbs. and appurtenances, for installation in intake chamber of the East Delaware Tunnel. CD 6/16/55.

Pa., Middleburg—B.A. 2/20—Municipal Auth., Middleburg Boro, Boro Bldg., sewerage sys. and sewage treatment plant, appurtenances. Plans deposit $20 sewerage sys. $15, sewage treatment plant. Gannett, Fleming, Corddry & Carpenter, Inc., 600 N. Second St., Harrisburg, engr. CD 4/18.

Del., Wilmington—B.A. 2/21—Bd. Water Comrs., 16 and Market St., water filtering plant. Plans deposit $10. Metcalf & Eddy, Statler Bldg., Boston, Mass., engrs. CD 10/9.

N. Y., Niagara Falls—B.A. 2/21—At office City Manager, Niagara Falls, water treatment plant, south of Buffalo Ave. at 53 St. Div. 7, structures; Div. 8, piping and equip.; Div. 9, outside piping; Div. 10, electrical work; Div. 11, heating and ventilating; Div. 12, plumbing; Div. 13, wash water tank. Plans deposit $20. Greeley & Hanson, 220 S. State St., Chicago 4, Ill., engrs.

Pa., Mayview—B.A. 2/21—General State Auth., 18 and Herr Sts., Harrisburg, sewage treatment plant, pumping station, sewage and collection sys. for Mayview State Hospital. $220,000. Plans deposit $10 each. Morris Knowles, 1312 Park Bldg., Pittsburgh, Zone 22, engr. Bids 1/31 rejected. CD 1/30.

N. Y., Otisville—B.A. 2/28—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, N. Y., Contr. 1, sewage treatment works exten. at Otisville Sanatorium. Plans deposit $5.

BIDS ASKED—BUILDINGS

N. J., Margate—SCHOOL—B.A. 2/21—Bd. Educ., Margate, school, $300,000. Saul Shaw, 24 Commerce St., Newark, engr. Alexander Merchant & Son, Elm Row, New Brunswick, archts. CD 12/26.

Pa., Armaugh Twp. (P.O. Reedsville)—SCHOOL—B.A. 3/8—Public School Bldg. Auth., 1400 N. Cameron St., Harrisburg, secondary school for Armaugh-Brown Joint School Bd. $725,000. Plans deposit $25. Hunter, Caldwell & Campbell, P.O. Box 911, Altoona, archts.

SOON LETS CONTRACT—BUILDINGS

Pa., Clarion—WAREHOUSE—Owens-Illinois Glass Co., Clark Bldg., Pittsburgh, Pa., soon lets contract warehouse, $300,000. R. L. Major, c/o owner, engr. in Charge of Construction.

LOW BIDDERS—BUILDINGS

Powell & Co., Allison Park, Pa. Low Bidder. **$98,480**. general constr. MAINTENANCE bldg. on Western Exten. Turnpike, Allegheny and Beaver Counties; **Ranallo Constr. Co.**, 4723 Baptist Rd., Pittsburgh, Pa. $117,500, general constr. MAINTENANCE BLDG., PENNSYLVANIA. Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg, Pa. Bids Jan. 30. CD 1/12.

Baton Constr. Co., 1717 Sansom St., Philadelphia, Pa. Low Bidder. **$530,000**, general constr. main LIBRARY; **Virginia Metal Products Co.**, 1223-29 Carlton St., Orange, Va., **$339,864**, book stacks, STATE COLLEGE, PA. Generayl State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Jan. 31. CD 1/9.

CONTRACTS—HEAVY CONSTRUCTION

Union Bldg. & Constr. Co., 631 Main Ave., Passaic, N. J. Contract Awarded. **$719,785**, grading 1.1 mi. Palisades Interstate Parkway, south of Hudson Ave. in Tenafly to 2,800 ft. south of Hillside Ave. at Alpine, Bergen Co., NEW JERSEY. State Hy. Dpt., Trenton, N. J. CD 2/2, under LB.

CONTRACTS—BUILDINGS

Frank H. Wilson & Co., 125 Coulter Ave., Ardmore, Pa. Contract Awarded. Approx. **$300,000**. OFFICE, ARDMORE, PA. Allen Sherman Hoff Co., 225 S. 15 St., Phila., Pa. Eastern Eng. Co., 836 Elm St., Reading, Pa., archts. CD 1/12

R J Kelly, 131 Walnut St. Clifton Heights, Pa. Contract Awarded. Approx. **$82,000**. rebuilding mfg. PLANT, CLIFTON HEIGHTS, PA. National Precision Casting Corp., Clifton Heights, Pa.

John W. Thompson Co., 306 E. State St., Trenton. Contract Awarded. Approx. **$82,000**, 1 story, 52x195 ft. frame, metal WAREHOUSE, EWING TWP. (Trenton P.O.), N. J. G. L. F. Exchange, Inc., Terrace Hill, Ithaca, N. Y.

Frank V. Radomski & Sons, Inc., 244 W. Queen Lane, Phila., Pa. Contract Awarded. Approx. **$150,000**. 1 story, 160x302 ft. WAREHOUSE and 1 story, 15x24 ft. BOILER HOUSE, both masonry, steel, LANSDALE, PA. Lansdale Tube Co., Lansdale, Pa. Bids Dec 12. CD 12/12.

▲ **Walsh & Constr. Co.**, 122 E. 42nd St., New York, N. Y. and 1114½ W. 3rd St., Davenport, Ia., B. Perini Constr. Co., 73 Montwait Ave., Framingham, Mass., S. J. Groves Contracting Co., 510 Wesley Temple Bldg., Minneapolis, Minn., and Slattery Cont. Co., 45-50 54th Ave., Long Island City, N. Y. Awarded Contract est. $300,000,000. steel MILL, MORRISVILLE, PA. U. S. Steel Co., 434 5 Ave., Pittsburgh, Pa. CD 2/2.

John De Paul & Sons, 1262 E. Washington Lane, Phila., Pa. Contract Awaded. **$82,000**, 1 story, 4000 sq. ft., structural steel, brick, masonry WAREHOUSE, PHILA., PA. Alex Wenger, 3 and Cherry Sts., Phila., Pa. Joseph Morgolis, 2206 St. James St., Phila., Pa., archt.

M. I. T. Corp., 158 N. 20 St., Phila., Pa. Contract Awarded. **$82,000**, 1 story, 40x86 ft., 20x25 ft., 2 story 40x85 ft., masonry mfg. PLANT, PHILA., PA. 49th and Lancaster Corp., 158 N. 20 St., Phila., Pa.

Martin Wolf, 5123 N. 10 St., Phila., Pa. Separate Contracts. **$300,000**. RESIDENTIAL DEVELOPMENT, W. Johnson St., PHILA., PA.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Virginia—WEIGHING BLDGS.—B.A. 2/20—State Hy. Dpt., Richmond, alterations to north and southbound truck weighing bldgs., 1.94 mi. south Maryland-Virginia State Line, Rte. 13, S.P. 1601-05, Old S.P. 280-DW1 (T.P. 98), Accomack Co. Plans deposit $5.

† **Louisiana**—B.A. 3/1—U. S. Eng., Dist of Frytania St., New Orleans, timber bridge at Station 27 plus 00 (Mile 43.5) over Bayous Rapides Boeuf, Cocodrie Diversion Channel, Reach 5, approx. 2½ mi. west of Lecompte, Rapides Parish, CIVENG 16-047-51-148. CD 6/26/46.

BIDS ASKED—BUILDINGS

S. C., Parris Island—HOUSING—B.A. 2/28—Pub. Wks. Office, Sixth Naval Dist., P. O. Box 365 Naval Base, construct, manage, finance, 85-unit military housing at U. S. Marine Corps Recruit Depot. $590,744. CD 9/29.

LOW BIDDERS—HEAVY CONSTRUCTION

Roy M. Homewood, Box 150, Chapel Hill, N. C., Low Bidder, **$60,739**, bridge over Haw River on county road between Burlington and Altamahaw, Proj. No. 5-9-42-207, Alamance Co.***W. F. Brinkley & Son Constr. Co., Inc., Box 595, Granite Quarry, N. C., **$86,932**, structures, 11.26 mi. U. S. 158 from point on U. S. 158 approx. 52 ft. north of north city limits of Mocksville northeast to point in U. S. 158, approx. 1,500 ft. southwest of Davie-Forsyth Co. line Proj. 7312, F-136 (1), Davie Co.***Bowers Constr. Co., Box 1706 Raleigh, N. C., **$315,899**, bridge on relocation of U. S. 421 over Yadkin River incl. approaches, Proj. 7390, Yadkin and Forsyth Counties***Wannamaker & Wells, Inc., Box 542, Orangeburg, S. C., **$116,728**, structures, 0.845 mi. from point on U. S. 258 in Snow Hill S. of present bridge over Contentnea Creek, N., Greene co.***received no bids Jan. 30, structures on U. S. 258 from intersection with N. C. 91 at point 0.5 mi. north of Snow Hill north through Farmville and Fountain to Pitt-Edgecombe co. line, Proj. 2291, Green and Pitt counties, NORTH CAROLINA. State Hy. & P. Wks. Comn., Raleigh, N. C. Bids Jan. 30. CD 1/19.

Wayne Eng. & Constr. Inc., Box 306, Mount Olive, **$62,444**, Low Bidder. b. conc., binder and surf. and structures, 0.445 mi. from point on U. S. 258 in Snow Hill south of present bridge over Contentnea Creek, Proj. 2290, F-222 (4), Greene Co.; **$120,814**, STBC, bit. surf. tr. or b. conc., surf. course 12.28 mi. Part 1, from point on county road approx. 2 mi. north of U. S. 301 east to N. C. 222, 0.4 mi. north of U. S. 301 at Kenly. Part 2, from point on edge existing pavement on county road 1.5 mi. southwest of N. C. 222 and northwest of Kenly, north across N. C. 222 and N. C. 42 to point on existing pavement 0.3 mi. south of N. C. 231, Proj. 4-9-35-219, Johnston Co.*** E. H. Hines Constr. Co., Box 924, Greenwood, S. C., **$82,939**, STBC, bit. surf. tr. or b. conc. surf. course 11.4 mi. Dellview Rd. from N. C. 150 at Cherryville to Cleveland Co. line, Dellview Rd. from Gaston Co. line to Helms Store-Bakers Cross Rd. County Rd. from N. C. 274 at Fohnsworth Store to N. C. 277, Post Rd. south from Cherryville to Cleveland Co line toward Marys' Grove Church County Road from N. C. 150 at east city limits of Cherryville to N. C. 274 at Heims, Proj. 9-9-80-217, Cleveland and Gaston Counties; **$93,736**, STBC, bit. surf. tr. or b. conc. surf. course 15.8 mi. from U. S. 21 in Troutman to Troutman Baptist Church from U. S. 1, 0.8 mi. south of Shepherds to Amity Hill Rd. 2.6 mi. west of Amity Hill, Holcombe Shop Rd. from N. C. 901 at Union Grove via church to Yadkin Co. line, Iredell Co.

Lavender Bros., Earl, N. C., $92,371, STBC, bit. surf. or b. conc. surf. course and structures 8.81 mi. county road from Hopper Park Bridge via Mountain View School to N. C. 16 Proj. 9-9-80-212, Cleveland Co. **$80,396**, STBC bit. surf. tr. or b. conc. surf. course and structures 7.98 mi. Cabiness Rd. from Route 26 at Wilson-Cornwall Gin to Mooresboro-New House Rd., Proj. 9-9-80-214, Cleveland Co.***Barrus Constr. Co., Box 561, Kinston, N. C., **$85,234**, sand aph. base and surf. course 7.88 mi. N. C. 12 from junction with U. S. 70, east of Kinston, southeast crossing Lenor-Jones Co. line toward Trenton, Proj. B-2-6-2-2,

BS2-6-20-109, Lenoir and Jones Counties; **$67,957,** sand asph. or b. conc. base and surf. course 12.4 mi. U. S. 70 in Newport, along Market and Orange Sts. to city limits then along to County road via State Prison Camp to Deep Creek Bridge then east and north to N. C. 101, 2.2 mi. southeast of Craven Co. line, Dual Dr. between U. S. 70 and Morehead Villa, Proj. 2-9-16-205, BS-27-16-26, Carteret Co.

Dickerson Inc., Box 448, Monroe, N. C., **$164,592,** STBC, sand asph. or b. conc. surf. course 12.43 mi. Part 1, from junction of county road with U. S. 58 approx. 2 mi. north of Scotland Neck east to intersection with county road, approx. 14 mi. northwest of Norfleet Part 2, from county road intersection in Norfleet, west on county to edge of surf. at intersection of county roads approx. 2 mi. southeast of Scotland Neck Proj. 1-9-8-210, Halifax Co.*** **Blankenship Bros.,** 2217 S. Tryon St., Charlotte, N. C., **$64,857,** traffic bound macad. or PCSBC and bit. surf. tr. 3.34 mi. from point on 22 ft. soil county road approx. 100 ft. southwest of its junction with Bee Mountain Rd. northeast to intersection with Greasy Creek Rd. then east to point approx. 0.5 mi. west of intersection with N. C. 18, Proj. BS-8-7-69-86, Caldwell Co.*****Taylor Constr. Co.,** Box 5119 Biltmore, N. C., **$111,649,** grading, added material and bit. surf. tr. 9.94 mi. County Rd. from junction N. C. 26, 2 mi. southeast of Marion, northeast approx. 3 mi. to junction county roads, then northeast, east, south and southeast to junction with N. C. 26, approx. 3.2 mi. southeast of Prison Camp, from point on U. S. 70, 0.8 mi. west of Nebo, south 1.8 mi. Proj. 9-9-84-208, McDowell Co.

A. R. Thompson, Contractors, Inc., Rutherfordton, N. C. **$112,642,** grading, added material, bit. surf. tr. of b. conc. surf. course 8.1 mi. Part 1, from point on U. S. 221, approx. 1 mi. south of Rutherfordton, south to Polk Co. line. Part 2, from point on Part 1, at Station 195 plus 90, northeast to point 1.7 mi. southwest of U. S. 221. Proj. 909-86-212, Rutherford Co.***received no bids Jan. 30, grading 15.1 mi. Proj. No. 2-9-206, Hyde Co., **$100,000-$125,000** westwardly, eastwardly and northerly to junction with U. S. 264. Part 2, from Sladesville eastwardly to junction with Part 1 and 1.9 mi. south of U. S. 264. Proj. No. 2-9-19-206, Hyde Co., **$100,000-$125,000** *****W. E. Graham & Sons,** Cleveland, N. C. **$53,941,** STBC and bit. surf. tr. or b. conc. surf. course 10.5 mi. Lilledoun Rd. from end pavement west to county road, Old Charlotte Rd. from Taylorsville to Payne Store, Little River Rd. from end pavement north 1.5 mi., Vashti Rd. from Vashti to Hiddenite paved road, Proj. 9-9-77-209, Alexander Co:*****White Constr. Co.,** Kinston, N. C. **$166,564,** sand asph. or b. conc. base and b. conc. surf. 6.94 mi. N. C. 43, widn. and resurf. N. C. 43 from the intersection of 32 ft. asph. street and on 16 ft. concrete pavement near Greenville to the intersection of N. C. 43 and N. C. 121 at Bruce, Proj. No. 1885 Pitt Co.

Zeigler-Cline Constr. Co., Box 386, Fayetteville, N. C., **$87,305,** sand asph. or b. conc. surf. course 25.1 mi. resurfacing 9 sections county roads and certain streets in Orrum and St. Pauls, Proj. 6-9-57-223, 224, 229, 230, 231, Code 5900-651, Robeson Co.*****Propst Constr. Co.,** Concord, N. C., **$165,487.** STBC and bit. surf. tr. 42.7 mi. surfacing 10 sects. county roads, Proj. 7-9-59-210, 212, Anson Co.*****Blythe Bros Co.,** Box 989, Charlotte 1, N. C. **$162,192,** added material and sand asph. or b. conc. surf. course 50.24 mi. surfacing 29 county roads and street, Code 5900-713, 7-9-63-212, Richmond Co.*****Midstate Contractors, Inc.,** Hickory N. C. **$68,728,** grading added material and bit. surf. tr. 6.81 mi. Part 1, from point approx. 0.8 mi. southwest of Morganton, south to intersection with U. S. 64, Part 9, from point on U. S. 70, approx. 10 mi. southwest of Morganton, south to a point approx. 4.8 mi. north of U. S. 64, Proj. 9-9-78-214, Burke Co., NORTH CAROLINA. State Hy. & P. Wks. Comn., Raleigh, N. C. Bids Jan. 19. CD 1/19.

CONTRACTS—HEAVY CONSTRUCTION

Henry G. Dupree, 1125 Kings Ave., Jacksonville 7, Fla. Contract Awarded. **$50,412.** repairs, imprvs. to McDuff pump. station and enlarging underground reservoir, JACKSONVILLE, FLA. City, City Hall, Jacksonville, Fla. Bids Dec. 7, awarded Jan. 11. CD 11/28.

CONTRACTS—BUILDINGS

John E. Taylor Constr. Co., 1055 N. Evergreen St., Memphis, Tenn. Contract Awarded. **$306,000.** WAREHOUSE, MEMPHIS, TENN. Great Atlantic & Pacific Tea Co., 5470 Hecla St., Detroit, Mich.

MIDDLE WEST

LOW BIDDERS—HEAVY CONSTRUCTION

Kenny Constr. Co., 111 W. Washington St., Chicago 2, Ill. Low Bidder. **$830,027.** Northeast Station low lift plant substructure, DETROIT, MICH. Bd. Water Comrs., 735 Randolph St., Detroit 26, Mich. Bids Jan. 25. CD 12/21.

LOW BIDDERS—BUILDINGS

Knowlton Constr. Co., 106 N. Main St., Bellefontaine, O. Low Bidder. **$326,000.** 1 story, part bsmnt., brick, steel, concrete SCHOOL, WESTERVILLE, O. Bd. Educ., Westerville, O. McLaughlin & Keil, Lima, O., archts. Bids Jan. 30. CD 1/10.

CONTRACTS—BUILDINGS

▲ **George Sheaf & Co.,** 449 Neilston St., Columbus, O. Contract Awarded. **$1,120,036.** 5 story bsmnt., brick, stone, concrete, structural steel COURT HOUSE annex, COLUMBUS, O. Franklin Co. Building Comn., Franklin Co., Columbus, O. Bids Jan. 25. CD 1/30, under LB.

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▲ **Sumner S. Sollitt & Co.**, 307 N. Michigan St., Chicago 1, Ill. Contract Awarded. **$2,400,000.** 2 twenty-two APARTMENTS, 252 units for personnel of Fifth Army, CHICAGO, ILL. Herbert S. Greenwald & Sam Katzin (Sponsor), Ericsson Dr. and E. 50 St., Chicago, Ill. A. Epstein & Sons, Inc., 2011 Pershing Rd., Chicago 9, Ill., archts. Awarded Jan. 25. CD 11/3.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Nebraska-Missouri**—B.A. on or About 2/27—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., levee, appurtenances, Sect II, Kansas City Unit, Kansas City's Flood Proj. at North Kansas City, Mo., CIVENG 23-028-51-75; levee, appurtenances, Birmingham Unit, upstream sect. along left bank of Missouri River in vicinity of Birmingham, Mo., Clay Co., CIVENG 23-028-51-76. CD 6/1/44.

† **South Dakota**—RAILROAD RELOCATION—B.A. About 3/20—U. S. Eng., 1709 Jackson St., Omaha, Neb., Chicago, Milwaukee, St. Paul & Pacific railroad relocation, Stage III, near Chamberlain, Brue and Lyman Counties, Spec. No. CIVENG 25-066-51-89.

▲ **Texas**—OIL PIPE LINE—Bids Asked—West Texas Gulf Pipe Line Corp. (Gulf Oil Co., Standard Oil of Ohio, Pure Oil Co., Cities Service Co.), Gulf Bldg., Houston, Tex. 300 mi. 26 in. welded joint crude oil pipe line, Colorado City to Wortham, **$14,000,000**; 160 mi. 24 in. welded joint crude oil line from Wortham to Sour Lake, **$7,750,000**; 110 mi. 18 in. welded joint crude oil lateral pipe line from Wortham to Longview, **$3,850,000**. CD 1/11.

BIDS ASKED—BUILDINGS

Tex., Alamo—DWELLING UNITS—B.A. 2/24—Alamo Housing Auth., Alamo, Tex., 30 dwelling units, $300,000. Plans deposit $25. Edwin W. Byers, Alamo, consult. engr. CD 1/22.

LOW BIDDERS—HEAVY CONSTRUCTION

Irby Constr. Co., 817 S. State St., Jackson, Miss. Low Bidder, **$166,864**, 88.8 mi. rural distr. lines, incl 78 miles conversion Grayson and Collin Counties, TEXAS. Grayson-Collin County Electric Co-operative, Inc., Van Alstyne, Tex. Bids Jan. 23. CD 1/15.

CONTRACTS—HEAVY CONSTRUCTION

St. Louis-San Francisco Ry. Co., E. L. Anderson, ch. engr., 309 N. Jefferson Ave., Springeld, Mo. Own Forces. 70x140 ft., brick, steel centralized WHEEL SHOP, 17 ft. high from floor to low steel, SPRINGFIELD, MO. CD 10/2/46.

South-East Water Co., 2534 S. Cinn St., Tulsa, Okla. Owner Builds. **$225,000.** 14 mi. water line from Tulsa to supply ranchers and farmers, TULSA, OKLA.

CONTRACTS—BUILDINGS

Brace & Carruth, 706 Garden Oaks St., Houston, Tex. Owner Builds. Approx. **$300,000.** HOUSING unit 4, area of N. Shepherd and W. 11 Sts., HOUSTON, TEX. CD 4/13.

City, City Hall, San Antonio, Tex. Purchase and Hire. **$85,000.** CARGO or STORAGE, SAN ANTONIO, TEX. Frank T. Drought, 117 W. Pecan St., San Antonio, engr. W. W. Toxey, city engr. Atlee B. & Rob. M. Ayres, Transit Tower, San Antonio, archts.

FAR WEST

SOON LETS CONTRACT—BUILDINGS

Wash., Seattle—WAREHOUSE—G. J. Callahan, 1607 Calhoun St., soon lets contract, 1 story, 120x120 ft., rein.-con. food warehouse. $85,000. Lawrence & Hazen, 9744 Lake Shore Blvd., archts.

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **Haddock Engineers, Ltd.**, 1616 Greenwood Ave., Montebello, Calif., Low Bidder. **$2,476,983**, Randsburg Wash test range facilities, Third Increment, Naval Ordnance Test Station, Spec. 26557, No. 24359, INYOKERN, CALIF. Dpt. Navy, Inyokern, Calif. Bids Jan. 30.

LOW BIDDERS—BUILDINGS

▲† **M. H. Golden Constr. Co.**, 485 Noel St., San Diego, Calif. Low Bidder. **$2,824,000.** LABORATORY, SUPPLY and UTILITY bldgs., Spec. No. 25885, No. 23528, SAN DIEGO, CALIF. Dpt. Navy, 1220 Pacific Hy., San Diego, Calif. Bids Jan. 30. CD 1/12.

CONTRACTS—BUILDINGS

Gus Bouten Constr. Co., N. 216 Division St., Spokane, Wash. Contract Awarded. **$141,200**, 126x101 ft., rein.-con. cold storage PLANT, PESHASTIN, WASH. Peshastin Fruit Grower's Assn., Peshastin, Wash. CD 1/23.

▲ **Swinerton & Walberg**, 2750 Halcyon St., San Leandro, Calif., Contract Awarded. Approx. **$7,000,000.** 730,000 sq. ft. PLANT, alongside present Dodge plant, SAN LEANDRO, CALIF. Chrysler Corp., 341 Massachusetts St., Detroit, Mich.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Ont., Toronto—SUBWAY—B.A. 2/19—Toronto Transportation Comn., 35 Yonge St., Toronto, steel track accessories for rapid transit subway. CD 10/6/43.

BIDS ASKED—BUILDINGS

▲ **Ont., Toronto**—OFFICE—B.A. 2/28—Dpt. P. Wks., Ottawa, Ont., 10 story, 123x135 ft. structural steel Postal Station "O", air-conditioning, St. Clair Ave. Approx. $1,200,000. Plans deposit $200. G. Brault, c/o owner, archt.

SOON LETS CONTRACT—BUILDINGS

Que., St. Simon De Drummond—CHURCH—D. Deshaies, archt., 737 Buchanan Ave., Montreal, soon lets contract steel, rein.-con., brick, block church; for Parish of St. Simon De Drummond, Rev. E. Laforest, cure, St. Simon De Drummond, Que. CD 7/14/49.

▲ **Que., Sherbrooke**—MILL—C. D. Goodman, archt., 1818 Sherbrooke St., W. Montreal, Que., soon lets contract 1 story, 142x403 ft., rein.-con. spinning mill addn. to plant, for Bruck Mills, Ltd., Cowansville. Approx. $1,000,000. CD 12/29.

LOW BIDDERS—BUILDINGS

Beattie Cadillac Chevrolet Oldsmobile Ltd., 832 Bay St., Toronto, Ont., cancelled bids to have been opened Dec. 27, truck garage, Commissioners St., TORONTO, ONT. Project deferred. CD 12/13.

CONTRACTS—HEAVY CONSTRUCTION

Bethlehem Steel Export Corp., Royal Bank Bldg., Toronto, Ont. Contract Awarded, structural steel for Sect. S-6, subway TORONTO, ONT. Toronto Transportation Comn., 35 Yonge St., Toronto, Ont. DeLeuw, Gather & Co., 150 N. Wacker Dr., Chicago, Ill., U. S. A., and Norman D. Wilson, 388 Yonge St., Toronto, Ont., engrs. Bids Jan. 15. CD 12/26.

CONTRACTS—BUILDINGS

M. J. Storm Constr. Co., Fort Erie, Ont. Contract Awarded. Approx. $100,000. concrete, steel, brick FACTORY addn., FORT ERIE, ONT. Horton Steel Co. Ltd., Fort Erie, Ont.

Lucien Vadeboucoeur, 2330 St. Anne St., St. Hyacinthe, Que. Contract Awarded. Approx. $500,000. general constr., 5 story Y-shaped, 40x200 ft. and 30x36 ft. rein.-con. SEMINARY addn., concrete fdns. at Grand Seminary Bldg., Pratte Ave., ST. HYACINTHE, QUE. Corp. Episcopole des Diocese de St. Hyacinthe, Que. Bids Dec. 19. CD 12/15.

▲ **J. F. Robillard**, 982 5th Ave., Verdun, Que. Own Forces. Approx. $1,000,000. 100 California-type BUNGALOWS, Dollard St. north of Elmsley St., VILLE LA SALLE, QUE.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Colo., Colorado Springs**—City, City Hall, 8,000 ft. tunnel, etc., Blue River Diversion Project. $9,000,000. Sewell Thomas, 2000 S. Acoma St., Denver, consult. engr. and archt. CD 11/21/44.

▲ **Ill., Chicago**—City, City Hall, water filtration plant, $85,000,000. Approved by U. S. Engineers. W. W. DeBerard, city engr. CD 12/29/49.

Ill., Jerseyville—City, City Hall, filtration plant and water sys. imprvs., addn. $500,000. Russell & Axon, 408 Olive St., St. Louis, Mo., consult. engrs. CD 7/27.

▲ **Md., Baltimore**—City, Bureau Water Supply, 500 Municipal Bldg., Zone 2, voted bonds part of Patapsco Park Development, 4 bridges, Baltimore and Carroll Counties, $4,000,000; Liberty Dam and control chamber, Carroll Co., $5,000,000. Leon Small, 500 Municipal Bldg., Zone 2, water engr. CD 11/17.

▲ **Minn., Richfield (P. O. Minneapolis)**—Village, G. Soberg, clk., defeated proposal to vote on authorization to construct WW sys. $6,987,491. MacGregor & Davis, 1108 Nicollet Ave., Minneapolis, consult. engrs. CD 12/29.

▲ **Tex., Bellaire**—Harris County Water Control & Imprvt. Dist. 24, Bellaire, WW $1,500,000. Frank J. Metyko, Scanlan Bldg., Houston, consult. engr. CD 11/29.

Wis., Kenosha—City, City Hall, WW alterations, addns. $400,000. Alvord, Burdick & Howson, 20 N. Wacker Dr., Chicago, Ill., consult. engrs.

SEWERS, WASTE DISPOSAL

▲ **Calif., Sacramento**—City, City Hall, sewage treatment and disposal plant, 38-acre site near Sacramento River south of here, $5,400,000. Clyde C. Kennedy, 604 Mission St., San Francisco, consult. engr. CD 11/15.

Colo., Denver—City and Denver Co., Denver, sewer lines to serve Sandersen Gulch Area, $320,000. Terry Owens, City Hall, city engr.

▲ **La., Ruston**—City, voted bonds, sanitary sewer imprvs. $1,000,000. CD 12/21/50.

Mich., Marysville—City Comn., voted bonds, sewage disposal plant, $500,000, lateral sewers, $200,000. Pate & Hirn, 532 Michigan Bldg., Detroit, consult. engrs. CD 11/1.

Mich., Negaumee—City, P. Wks. Dpt., sanitary sewerage sys., sewage treatment plant, $375,000. Consoer, Townsend & Assoc., 351 E. Ohio St., Chicago, Ill., consult. engrs.

Minn., Marshall—City, H. N. Harmon, aud., defeated $350,000 bonds Jan. 16, sewage treatment plant, $331,925, Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, consult. engrs. CD 1/11.

▲ **Minn., Richfield (P. O. Minneapolis)**—Village, G. Soberg, clk., defeated proposal to authorize constr. complete sewerage sys. and sewage treatment plant, $7,314,539. MacGregor & Davis, 1108 Nicollet Ave., Minneapolis, consult. engrs. CD 12/29.

Neb., Lincoln—City, City Hall, sewage plant imprvs. $950,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs.

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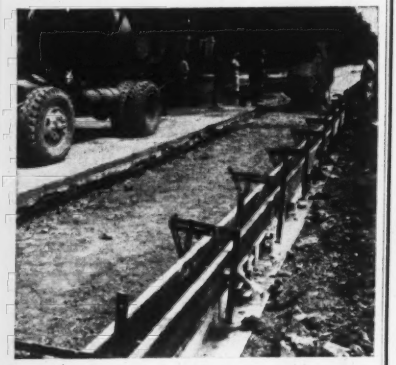

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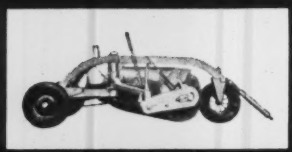

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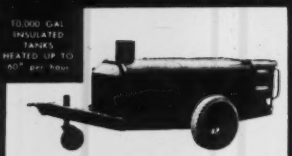

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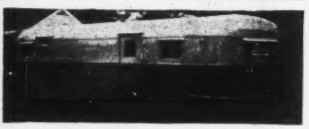

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O., **Dayton**—City, City Hall and Montgomery Co., Court House, Dayton, lateral and interceptor sewer serving Ridge Ave. area within city and Northridge and Shiloh areas in county. $552,000. Earl Riber, co. sanitary engr. CD 10/23/45.

▲ O., **Zanesville**—City, sewage disposal plant. $3,000,000.

Pa., **Bridgeport**—James Lees & Sons Co., Bridgeport, Pa., sewage disposal plant. Approx. $100,000. Robert O. Oberholtzer, c/o owner, ch. engr.

▲ Tex., **Bellaire**—Harris County Water Control & Impr. Dist. 24, Bellaire, sewage disposal plant, $750,000; storm sewers, $1,000,000; sanitary sewer lines, $750,000; drainage, $650,000. Frank J. Metyko, Scanlan Bldg., Houston, consult. engr. CD 11/29.

Tex., **San Angelo**—City, sanitary sewers. $550,000. Freese & Nichols, 407 Danciger Bldg., Forth Worth, consult. engrs. Koch & Fowler, 3900 Lemmon St., Dallas, master planners. CD 12/8.

BRIDGES

▲ Me., **Portland**—State Hy. Dpt., Augusta, and Boston & Maine R.R., S. G. Phillips, ch. engrr., 150 Causeway, Boston 14, Mass., combination steel, concrete railroad-hy. bridge over Fore River. $7,000,000. Lucius D. Barrows, Augusta, ch. engr.

Mass., **Boston**—City, man-made lagoon dog-leg causeway to maintain high tide level of water from Headhouse to Castle Island, South Boston's Pleasure Bay, $440,000.

▲ **Washington**—State Hy. Dpt., Olympia,
Skagit Co.—bridge over Skagit River at Mt. Vernon, $1,295,000.
reonstr. 3 bridges east of Rockport, $69,500. W. A. Bugge, state hy. dir.

▲ Wash., **Seattle**—City, County-City Bldg., bridge over East and West Waterways. Approx. $2,000,000. R. W. Finke, city engr. CD 7/18/45.

▲ B. C., **New Westminster**—City, City Hall, 1 mile bridge, 80 ft. high, 5 steel spans with rein.-con. approaches, from New Westminster to Lulu Island, $4,700,000.

STREETS AND ROADS

N. J., **Trenton**—City, City Hall, repaving parts 14 principal city streets, Oak Lane, Grand, Second, Bloomburg, Hanover, Anderson, Market, Broad and Lalor Sts., Hoffman, N. Clinton, Hermitage and Greenwood Aves., Donnelly Dr. $789,500. Joseph English, 10 Morningside Dr., engr.

Tex., **San Angelo**—City, street imprvs., paving. $850,000. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. Koch & Fowler, 3900 Lemmon St., Dallas, master planners. CD 12/8.

EARTHWORK, WATERWAYS

▲ **Washington**—Pacific Power & Light Co., 920 S. W. 6 St., Portland, Ore., dam 305 ft. high above bedrock and hydroelectric plant to produce 100,000 kw. initially, on Lewis River, Woodland, $26,000,000. Corbett McLean, c/o owner, engr.

▲ **Alberta**—Prairie Farm Rehabilitation Admin., 910 McCallum-Hill Bldg., Regina, Sask., expansion irrigation system at St. Mary's River Dam and Milk River Irrigation System. $2,000,000. CD 12/3/43.

▲ **Quebec**—Aluminum Co. of Canada Ltd., Sun Life Bldg., Montreal, Que., 650,000 hp. power development on Peribonka River, 35 mi. from Devil's Falls, Chutes De La Savanne. Approx. $25,000,000.

▲ **Quebec**—Manicouagan Power Co., c/o Quebec North Shore Paper Co., Bie Comeau, dam and power plant near confluence of Manicouagan River with St. Lawrence River, near Outardes. $15,000,000-$20,000,000. H. G. Acres & Co., Niagara Falls, Ont., consult. engrs. CD 11/29.

AIRPORTS

▲† Fla., **Jacksonville**—JET PLANE BASE—Dpt. Navy, Bureau Yards & Docks Annex, Arlington, Va., dual North and South runways, single East-West Runway new fuel pipe line from Naval Air Station Jacksonville, fuel storage facilities and jet plane parking aprons at Cecil Field, Major Jet Plane Base, near here, $8,000,000. Robert & Co. Assoc., 96 Poplar St. N. W., Atlanta, Ga., archts. and engrs.; runways, exten. existing runways, high intensity lighting sys. for jet planes at Naval Air Station, $3,758,000. Smith & Gillespie, Roberts Bldg., Jacksonville, Zone 1, consult. engrs. Kemp, Bunch & Jackson, Fla. Theatre Bldg., Jacksonville, archts. CD 8/17 and 12/26.

▲† Fla., **Jacksonville**—GRADING, etc.—Dpt. Navy, Bureau Yards & Docks Annex, Arlington, Va., grading, draining 1900 acre area adjoining Cecil Field Jet Plane Base, near here, for enlargement and expansion facilities, $1,000,000.

▲† Fla., **Mayport**—RUNWAYS, etc.—Dpt. Navy, Bureau Yards & Docks Annex, Arlington, Va., exten. runways bldg. a west wall to turning basin Three Finger Piers for crash boats, renovation existing bldgs. and housing, moving 3 mi. road, Mayport Carrier Base, $3,000,000. Bail, Horton & Assocs., Ft. Myers, consult. engrs. CD 12/20.

▲† Fla., **Orlando**—AIR BASE—U. S. Eng., 575 Riverside Ave., Jacksonville, Zone 1, rebuilding, enlarg-

Ing Pine Castle Air Base, 6 mi. from here, $30,465,000.

▲† **Kan., Wichita**—AIRPORT IMPRVS.—U. S. Eng., 601 Davidson Bldg., Kansas City, Mo., exten., imprv. Air Force Base, $37,500,000.

† **La., Lake Charles**—DEFENSE FACILITIES—U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex., plans by Bodman & Murrell, 713 Reymond Bldg., Baton Rouge, defense facilities, $500,000, Brown & Butler, Ft. N. Blvd., Baton Rouge, consult. engrs. CD 1/30.

† **La., Lake Charles**—DEFENSE FACILITIES—U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex., plans by F. Shutt's Sons, 324 Pujo St., defense facilities at Lake Charles Air Force Base, $450,000. CD 1/30.

▲† **N. Y., Sampson**—BARRACKS, etc.—Dpt. Air Force, The Pentagon, Wash. 25, D. C., barracks, drill hall and administration bldg. at Air Force Training Center, $18,639,000.

▲† **Tenn., Smyrna**—RUNWAYS—U. S. Eng., 2301 Grant St., Mobile 7, Ala., plans by Marr & Holman, Stahlman Bldg., Nashville, expansion proj. incl. runways extensions, construct aprons, field lighting, navigational aids, fuel storage facilities, at Stewart Air Force Base. Approx. $3,000,000. CD 1/26.

▲† **Tex., Amarillo**—AIRPORTS IMPRVS.—U. S. Eng., 1127 Texas & Pacific Bldg., Fort Worth, addnl. expansion at Amarillo Air Force Base, $15,800,000. CD 1/26.

† **Tex., Austin**—DEFENSE FACILITIES—U. S. Eng., 606 Santa Fe Bldg., Galveston, plans by Giesecke, Kuehne & Brooks, 121 E. 8 St., Austin, defense facilities, Bergstrom Field. $550,000.

▲† **Tex., Beeville**—AIRFIELD—Dpt. Navy, 18 St. and Constitution Ave. N. W., Wash. 25, D. C., reactivation of Chase Field for advanced naval flight training occupancy; incl. making existing bldgs. and facilities serviceable and construct new field and personnel bldgs., utilities and allied constr. $4,000,000.

▲† **Tex., Big Spring**—RUNWAYS, etc.—U. S. Eng., 1127 Texas & Pacific Bldg., Fort Worth, runways, taxiways, $6,000,000; storm and drainage, $350,000; sanitary sewers, $250,000; WW, $175,000; lighting sys., $200,000; academic and hangars, $2,500,000; roads and streets, area paving, $400,000; misc. constr. $4,125,000, at Big Spring Air Force Base.

▲† **Tex., Bryan**—TAXIWAYS, etc.—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, taxiways, runways, $2,500,000; misc. constr. $1,000,000; warehousing, $650,000; hangars, $550,000; academic bldgs. $500,000; streets and roads, $300,000; sanitary and storm sewers, $350,000; WW. $200,000; area and field lighting, $150,000.

▲† **Tex., Fort Worth**—AIRPORT—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, construction work at Carswell Air Force Base. $5,000,000. Freese & Nichols, 407 Danciger Bldg. Carter & Burgess, Century Bldg., Boese & Harkrider, Texas and Pacific Bldg., consult. engrs. CD 11/21.

† **Tex., Killeen**—DEFENSE FACILITIES—U. S. Eng., 606 Santa Fe Bldg., Galveston, plans by Tatum & Quade, 2812 Fairmount St., Dallas, defense facilities, Gray Air Force Base. $550,000. Forest & Cotton, Praetorian Bldg., Dallas, consult. engrs.

▲† **Tex., Lackland Air Base (Br. San Antonio)**—Housing, etc.—U. S. Eng., 606 Santa Fe Bldg., Galveston, housing for 10,000 men, $13,500,000; warehouse, $6,000,000; academic bldgs. $5,000,000; misc. contr. of bldgs. $3,263,000; lighting sys., outside field and area, $275,000; fueling sys. $400,000; WW. $500,000; sanitary sewerage sys. $450,000; drainage, $500,000; paving $200,000; gas sys. and lines, $200,000. CD 1/5.

† **Tex., Pampa**—BUILDINGS, etc.—Dpt. Air Force, Pentagon Bldg., Wash., D. C., reactivating reconditon bldgs., facilities at existing Army Air Force Base. $500,000.

▲† **Tex., Randolph Field**—AEROMEDICAL CENTER—Dpt. Air Corp., Randolph Air Force Base, Randolph Field, aeromedical center, $30,000,000.

▲† **Tex., Randolph Field**—TAXIWAYS, etc.—U. S. Eng., 606 Santa Fe Bldg., Galveston, taxiways, $1,000,000; misc. constr. for Airport Training Center, $732,000; exten. operations facilities, $750,000; ramps, $300,000; fuel storage sys. $350,000; parking ways, $600,000.

▲† **Tex., Victoria**—JET BASE—U. S. Eng., Santa Fe Bldg., Dallas, Tex. jet base, constr. new facilities, expanding runways at old Foster Field. $1,000,000.

▲† **Tex., Waco**—AIR BASE—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, addnl. misc. construction at Connally Air Force Base, incl. warehousing, hangars and allied bldgs., $1,050,000; runway, taxiways, parking area exten., imprvs. $1,500,000; sanitary sewers, $250,000; WW. $200,000. H. B. Gieb & Assoc., 2719 McKinney St., Prof. Bldg., Dallas, engrs.

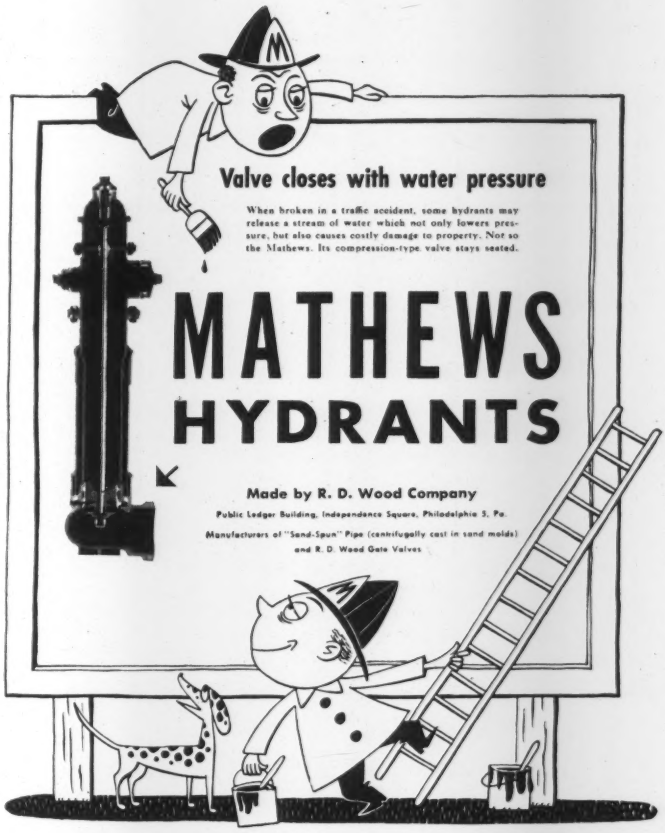
LATIN AMERICA

Mexico—Mexican Govt., Banco E y A, Ejido, 36, Mexico City, plans home colonies for armed services personnel and families. $1,150,000.

Mexico, Mexico City—Tubos Bufalo, S.A. Av. Abel. 41-C Col. Guadalupe, Tepeyac, Mexico City, plans metallic pipes factory. $400,000.

PUBLIC BUILDINGS

† **Arkansas**—WAREHOUSE—U. S. Eng., 300 Broadway, Little Rock, Ark., warehouse facilities at Pine Bluff Arsenal, $500,000.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Calif., Bakersfield — SCHOOL — Bakersfield Elementary School Dist., Bakersfield, 1600 K St., 64,000 sq. ft., Junior High School, Bell Terrace and P St. **$750,000.** Hillman & Nowell, 816 W. 5 St., Los Angeles, structural engr. Leste R. Kelly, 443 S. Beaudry St., Los Angeles, mech. engr. CD 1/25.

Calif., Bakersfield—SCHOOL—Fairfax Elementary School Dist., Mark R. Linscott, supt., Rt. 6, Box 586, Bakersfield, plans by Frank Wynkoop & Assocs., 17 St. and Chester Ave., 2 schools, Fairfax School addns., new school on Virginia Ave., near here. **$674,000.**

Calif., Burlingame — SCHOOL — Burlingame Elementary School Dist., Geo. V. White, supt. schools, Burlingame, plans by Hertzka & Knowles, 85 Post St., San Francisco, school Mills Estate adjacent to Ray Park opposite end of Quesada Way. **$800,000.**

▲ **Calif., Fresno**—HOUSING—Fresno Housing Auth., City Hall, plans by Walter Wagner, 1830 Van Ness Ave., 224 stucco dwelling units. **$1,500,000.**

▲ **Calif., Inglewood**—SCHOOL—Inglewood School Dist., Inglewood, defeated **$1,900,000** bonds, school. CD 12/14.

▲ **Calif., La Mesa**—SCHOOL—La Mesa-Spring Valley School Dist., Heller Bldg., La Mesa, plans by S. W. Hamill, Scripps Bldg., San Diego, **$1,082,909.** CD 11/23/49.

▲† **Calif., San Francisco** — RADIOLOGICAL — Twelfth Naval Dist., Federal Office Bldg., San Francisco, Steel rigid frame NAVAL RADIOLOGICAL BLDG. and converting, exten. Bldg. 351, **$1,000,000.** Leland L. Rosener, 233 Sansome St., San Francisco, consult. structural engr.

Conn., Wethersfield—SCHOOL—Town Bd. Educ., Town Hall, high school. **$500,000.**

▲ **Del., Newark**—EDUCATIONAL—University of Delaware, Newark, plans by E. Wm. Martin, 803 West St., Wilmington, education bldg. **$1,250,000.** CD 3/11/46.

Fla., Jacksonville—SCHOOLS—Bd. P. Instruction, Jacksonville, plans by Russell, Seymour, Atlantic Bank Bldg., Jacksonville, Zone 1, school, Montcrief Rd. and W. 45 St. for negroes Approx. **$400,000;** plans by H. J. Kluiho, 9 Ocean St., Jacksonville, Zone 2, school in North Springfield Sect. Approx. **$350,000.** CD 10/10/49.

Ill., Harvard—SCHOOL—Harvard School Dist. 50, N. Jefferson St., bond election Feb. 24, high school and grade school. **$850,000.** Bradley & Bradley, 226 Main St., Rockford, Ill., archts. CD 11/27.

Ind., Gary—HOUSING—Gary Housing Auth., K. A. Parmalee, exec. secy., Gary, plans by Beine, Hall & Curran, archts. and consult. engrs., 607 Broadway, housing. **$500,000.**

Ind., Hammond—SCHOOL—Bd. School Trustees, Dr. H. Eggers, pres., Hohman Ave., plans by Warren S. Holmes, Old Tower Bldg., Lansing, Mich., 2 story, brick, stone, rein.-con. Morton School, **$550,000.** CD 11/20/45.

Md., Hagerstown—HOUSING—Hagerstown Housing Auth., plans by Proctor & Englehardt, 8616 Georgia Ave., Silver Spring, 2 story, 50 unit concrete, brick housing units, **$310,000;** 2 story, 80 unit concrete, cinder block, brick housing units, **$490,000.**

▲ **Mass., Boston**—HOUSING—City of Boston Housing Auth., 230 Congress St., plans by Desmond & Lord, 6 Beacon St., 6 story, steel 500 brick housing units, Proj. 2-9, Blue Hill Ave. and American Legion Hy., Dorchester, **$5,000,000.** CD 12/15/48.

Mass., Hamilton—SCHOOL—Town, School Bldg. Comn., 14 Union St., plans by Anderson Nichols & Co., 53 State St., Boston, 1 story, masonry school **$600,000.** CD 1/22.

▲ **Mass., Hingham** — SCHOOL — Regional Dist. School Comn., Towns of Hingham and Hull, Town Hall, Hingham, brick, steel, concrete Old Colony Regional High School, **$2,459,000.**

▲ **Mass., Taunton**—HOUSING—City of Taunton Housing Auth., Taunton, plans by Isador Richmond & Carney Goldberg, 16 Arlington St., Boston, 2 story housing Proj. PHA 17-1, **$1,291,434.** CD 8/21/50.

Mass., Waverly (Br. Boston)—HOSPITAL—State, Dpt. Mental Health, Boston, plans by Thomas F. McDonough,

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Tinney Drilling Co.

Grafton, W. Va.

25 Huntington Ave., Boston, Contr. I, hospital for Walter E. Fernald School. $650,000. Edward J. Hanlon, 25 Huntington Ave., Boston, consult. engr.

Mich., Flint—HEATING PLANT—State, A. N. Langlus, dir. Bldg. Dpt., Lansing, brick, steel, concrete central heating plant for School for the Deaf, $500,000. E. R. Little Co., 1806 Kales Bldg., Detroit, consult. engr.

▲ **Mich., Grand Haven**—HIGH SCHOOL—City Bd. Educ., plans by Warren S. Holmes Co., 2200 Olds Tower, Lansing, brick, steel, concrete high school, $1,500,000. CD 6/29/50.

▲ **Mo., Jefferson City**—STATE OFFICE—State Bd. P. Bldgs. Governor Forrest Smith, chn., Capitol, plans by Marcel Boulicault, Ambassador Bldg., 411 N. 7 St., St. Louis, Zone 1. 5 story, steel, concrete top addn. to 8 story state office bldg., Capitol Ave. and Jefferson St. $1,775,000.

▲ **Neb., Elm Creek**—POWER PLANT—Central Nebraska Public Power & Irrigation Dist., Hastings, power plant, near here. $2,270,000. Geo. E. Johnson, c/o owner, ch. engr.

† **N. M., Alamogordo**—BACHELOR QUARTERS—U. S. Eng., Box 1538, Albuquerque, plans by Ferguson-Stevens-Beck, 111 S. Amherst Ave., Albuquerque, bachelor quarters at Proving Grounds. $750,000. CD 1/30.

▲ **N. Y., Brooklyn**—HOUSING—New York Housing Auth., 63 Park Row, New York, Zone 7 plans by Unger & Unger, 130 Broadway, Zone 11, thirteen 7 story Brevoort Houses, site bounded by Ralph Ave., Fuller St., Patchen Ave. and Bainbridge St. $8,281,767. CD 3/18/48.

▲ **N. C., Charlotte**—SCHOOLS—City School Bd., J. W. Wilson, supt. Schools, 600 E. Trade St., school in Camp Greene Community, $300,000; school in Double Oaks, $426,000; school in vicinity of Revolution Park, $300,000; school for Negroes on York Park Rd., $300,000.

N. C., Winston-Salem—LIBRARY—Winston-Salem and Forsyth County Library, Ralph P. Hanes, chn., Winston-Salem, library. $800,000.

O., Toledo—DORMITORY—University of Toledo, W. Bancroft St., plans by Peterson, Hoffman & Barber, Spitzer Bldg., men's dormitory for 360 students, west of Campus Rd. near W. Bancroft St. $600,000. CD 1/8.

▲ **Ore., Corvallis**—BOILER, etc.—State Bd. Higher Educ., Eugene, boiler, generator and heating sys. and utility tunnel at Oregon State College. $1,000,000. W. Bruce Morrison, Cascade Bldg., Portland, consult. engr.

▲ **Ore., Portland**—HOSPITAL—State Bd. Higher Educ., Eugene, state teaching hospital. $6,000,000. CD 6/22/49.

▲† **Pa., Annville**—CAMP REHABILITATION—Dpt. Army, Camp CO, Indiantown Gap, Annville, rehabilitation Indiantown Gap Military Reservation. $3,000,000.

Pa., Munhall—SCHOOL—School Dist. of Munhall, Munhall, plans by D. Roderich Jones, 135 E. 8 St., Homestead 1 and 2 story, brick on tile, Woodlawn School, $500,000.

▲† **Pa., New Cumberland**—ADMINISTRATION, etc.—Dpt. Army, 121 N. Broad St., Phila., plans by H. A. Kuljian & Co., 1200 N. Broad St., Phila., administration bldg. $980,000; boiler plant, $650,000. CD 1/18.

Pa., Newtown—HIGH SCHOOL—Council Rock High School Dist., Newtown, plans by Heacock & Platt, 152 N. 15 St., Phila., high school. $500,000. CD 9/19/46.

▲ **Pa., Phila.**—HOUSING—Phila. Housing Auth., 42 S. 15 St., plans by Oscar G. Stonorov, Broad St. Station Bldg., Schuylkill Falls Proj. $4,000,000. CD 9/12/49.

▲† **Pa., Tobyhanna**—SIGNAL CORPS DEPOT—Dpt. Army, Signal Corps, c/o U. S. Eng., 127 N. Broad St., Phila., Signal Corps Depot. $26,000,000.

▲† **Tex., Mineral Wells**—BUILDINGS—U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, plans by Koch & Fowler, 3900 Lemmon St., Dallas, reconstruct bldgs. and construct addnl. new bldgs. for Air Force Personnel occupancy, for training engineers, (Camp Wolters) $750,000; WW $175,000; sanitary sewers, $200,000; drainage, $150,000; street and road constr. and surf. $175,000. CD 1/5.

▲ **Tex., Port Arthur**—HOUSING—Port Arthur Housing Auth., Port Arthur, plans by Golemon & Rolfe, 915 Woodrow St., Houston, 452 brick veneer housing units, concrete slab fdn., $3,390,000; 18 two story bldgs. for total 148 housing units, $910,000. Howard Johnson, Scanlan Bldg., Houston, and W. P. Moore, 4605 Montrose St., Houston, consult. engrs. CD 9/12/49.

▲† **Tex., Texarkana**—ARSENAL—U. S. Eng., Box 61, Tulsa, Okla., expansion Texarkana Red River Arsenal. $5,000,000.

Wash., Ephrata—SCHOOL—School Bd., Ephrata, election Mar. 13, special levy to aid financing high school. $600,000, J. M. Taylor, Jr., Arcade Bldg., Seattle, Zone 1, archts.; and grade school, $250,000, W. H. Rother, Yakima, archt. CD 1/5.

▲ **Wash., Puyallup**—PLANT SCIENCES, etc.—Washington State College, Pullman, plant science bldg., $600,000; poultry bldg., $100,000; remodeling and constr. greenhouses, dairy barns and sheds, $300,000, all Western Washington Experiment Station. CD 10/18.

Alta., Edmonton—STUDENT UNION—University of Alberta, Edmonton, plans by Rule Wyn & Rule, 11422 Jasper Ave., Edmonton, 3 story bsmnt., students union bldg. addn., etc. $975,000. CD 1/23.

N. B., St. John—APARTMENTS—Central Mortgage & Housing Corp., 1032 Gottingen St., Halifax, N. S., 96-apartment development, Portland Place along the Rifle Range Valley. Approx. $575,000. J. P. Mangan, c/o owner, engr.

COMMERCIAL BUILDINGS

▲ **Ala., Birmingham**—CHURCH—Central Park Baptist Church, 1900 43 St., plans by Lawrence Whiten, 2315 21 Ave. S., church. $1,000,000. CD 1/25.

▲ **Calif., Bakersfield**—HOTEL—Hull Hotels Corp., Hollywood Roosevelt Hotel, El Rancho, Bakersfield, 2 story hotel, 14 acres in Westchester tract. $2,000,000.

Calif., Los Angeles—DWELLINGS—Dunas, Greene, & Dunas, Inc., 216 LeDoux Rd., Beverly Hills, plans by Southwest Drafting Service, 2724 E. Florence Ave. 119 frame, stucco dwellings in Reseda District. $500,000.

Calif., Los Angeles—DWELLINGS—Harbor Parks Corp., 4285 Huntington Dr., Los Angeles, plans by Caldwell & Mason, 2155 Pacific Ave., Long Beach, 102 frame stucco dwellings Baywater Ave. and 29 St., San Pedro Dist. $677,600.

Del., Newark—OFFICE—E. I. duPont de Nemours & Co., Inc., de Nemours Bldg., Wilmington, office. $500,000. H. M. Gordon, c/o owner, supervising dir. constr. division.

▲ **Me., Portland**—MEDICAL CENTER—Maine General Eye & Ear Infirmary, Childrens Hospital, 22 Arsenal St., 10 story medical center with admin. bldg., $4,000,000.

▲ **Mass., Fitchburg**—HOSPITAL—Burbank Hospital, Nichols St., brick, steel, concrete hospital, Nichols St. $2,500,000.

▲ **Mass., Holyoke**—HOSPITAL—Holyoke Hospital, Beech St., plans by James H. Ritchie & Assoc., 38 Newbury St., Boston, 5 story, brick, steel, concrete new wing hospital addn. $1,600,000.

▲ **Mich., Port Huron**—HOSPITAL—Port Huron Hospital Bd. Trustees, plans by Smith-Hinchman & Grylls, Inc., 800 Marquette Bldg., Detroit, brick, steel hospital addn. $1,000,000.

N. Y., Forest Hills—APARTMENT—Max Kalb, c/o Julius Fishkind, archt., 161-19 Jamaica Ave., Jamaica, 6 story, 68x180 ft. apartment for 61 families, 67 Ave. and Clyde St. $500,000.

▲ **N. Y., Hicksville**—OFFICE—Long Island Lighting Co., 250 Old Country Rd., Mineola, plans by Francisco & Jacobus, 511 Fifth Ave., New York, Zone 17, 2 story office and other structures on 60 acre tract, Old County Rd. $4,000,000.

▲ **N. Y., New York**—OFFICE—Syndicate, c/o Charles F. Noyes Co., Inc., 4 Wall St., Zone 5, 40 story office bldg., 280 Broadway, from Reade to Chambers Sts. $40,000,000.

▲ **O., Canton**—HOSPITAL—Sisters of Mercy Hospital, Harrison and 12 Sts., plans by Schmidt, Garden & Erikson, 104 S. Michigan St., Chicago 3, Ill., 200-room hospital. $2,500,000. CD 9/23/49.

Pa., Haverford—HOUSING—Bryn Manor Homes, Inc., Montgomery and Merion Aves., Bryn Mawr, delevolpment of Winsor Estates, Woodside Rd., $500,000.

Tex., Baytown—CHURCH—Memorial Baptist Church, Baytown, church, $500,000.

Tex., Houston—SHOPPING CENTER—Brace & Carruth, 706 Garden Oaks, shopping center off N. Shepherd and W. 11 Sts., $4,000,000.

▲ **Tex., Victoria**—BANK, etc.—Victoria Bank & Trust Co., Victoria, plans by K. Franzheim, 2306 Crawford St., Houston, 8 story, bsmnt., masonry bank and office, concrete pier and beam fdn., air-conditioning, $1,500,000.

▲ **Tex., Wichita Falls**—HOUSING—Dpt. Air Force, The Pentagon, Wash. 25, D. C., construct, manage, finance, 612 housing units at Shepherd Air Fore Base, $5,508,000. Charles E. Armstrong, Majestic Bldg., Fort Worth, archt. CD 12/8.

W. Va., Fairmont—OFFICE—Monongahela Power Co., Fairmont, plans by Tucker & Silling, Masonic Temple Bldg., Charleston, 2 story, 52,500 sq. ft., brick office. $900,000.

W. Va., Morgantown—SHOPPING CENTER—E. S. Field, 109 Ridgeley Rd., plans by Glenn C. Hancock, 701 Atlas Bldg., Charlestown, 1 story, 86x127x67 ft., brick, block, two level shopping center. $523,500.

▲ **Alta., Calgary**—APARTMENT HOTEL—D. B. Landers, Calgary, apartment hotel on Lindsay Estate, Rideau Ward. $2,000,000

Sask., Humboldt—HOSPITAL—St. Elizabeth Hospital Bd., Humboldt, plans by Webster & Gilbert, 212 C. P. R. Bldg., Saskatoon, 125-bed hospital, $700,000.

INDUSTRIAL BUILDINGS

▲ **Calif., Niles**—PLANT—Pacific State Steel Corp., Alvarado-Niles Rd., plant expansion imprvs. $2,500,000. Kaj Theill, 580 Market St., San Francisco, consult. engr. CD 1/4.

▲ **Colo., Denver**—DISTRIBUTION CENTER—Safeway Food Stores, 575 Mission St., San Francisco, Calif., plans by C. E. Keyser, 924 Broadway, Denver, Colo., and 609 Minnesota Ave., Kansas City, Kan., distribution center. $2,000,000. CD 3/6.

▲ **Ill., Lemont**—POWER PLANT UNIT—Public Service Co. of Northern Illinois, 72 W. Adams St., Chicago, Zone 3, 1,000,000 kw. power plant first unit 150,000 kw., on 200 acre site along ship canal, near here. $1,000,000.

Kan., Kansas City—FREIGHT DEPOT—Chicago Rock Island & Pacific R. R. Co., W. B. Throckmorton, ch. engr., LaSalle St. Station, Chicago, Ill., freight depot, Armourdale, R F D from Kansas City, Kan. $500,000.

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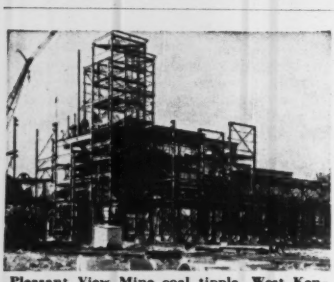

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▲ **Mass., Boston**—MEAT MARKET TERMINAL—Boston Wholesale Meat Terminal, Inc., 1 State St., plans by Thomas Worcester, Inc., 84 State St., 2 and 5 story, rein.-con., brick Wholesale Meat Market Terminal, (South End) Southampton St. $10,000,000. Worcester Eng. Co., 21 Produce Exchange, consult. engr.

▲ **Mass., Danvers**—MANUFACTURING—Hytron Radio & Electronics Corp., 76 Lafayette St., Salem, mfg. bldg., Edicott St. $1,000,000. CD 1/4 under Mass., Salem.

▲ **Mich., Trenton**—MILL—Gibraltor Steel Corp., c/o Detroit Steel Corp., 1025 S. Oakwood St., Detroit, steel mill on 900 acre tract on Detroit River. $100,000,000.

▲ **N. J., Trenton**—FACTORY—Stanley Switik, Labor and Hancock Sts., plans by Hankin & Stull, 212 W. State St., Trenton, two factory bldgs. $1,250,000.

▲ **O., Columbus**—FACTORY—Ebco Mfg. Co., 401 W. Town St., factory for assembly water coolers, etc. on tract at Cleveland Ave. and Innis Rd. $1,000,000.

▲ **O., Dayton**—FACTORY—United Fireworks Mfg. C., Union Rd., factory expansion, six 40x80 ft. assembly bldgs., 3 hydraulic press bldgs., 2 mixing rooms, dry house facilities and 5 warehouse magazines on 142-acre farm tract. $1,500,000.

Okla., Okmulgee—REFINERY—Phillips Petroleum Co., Bartlesville, enlarging Okmulgee refinery to make high octane gasoline. $600,000. S. S. Learned, Bartlesville, c/o owner, engr. CD 1/26/50.

▲ **Ore., Portland**—PLANT—United States Lime Products Corp., 1840 E. 25 St., Vernon (Br. Los Angeles), Calif., lime reduction plant. $1,500,000.

▲ **Pa., Finleyville (Union Twp.)**—COMPRESSOR STATION—Equitable Gas Co., 435 5 Ave., Pittsburgh, Pa., 1 story, concrete block compressor station near here. $1,000,000.

▲ **Pa., Phila.**—FACTORY, etc.—Quaker Rubber Corp., Tacony and Comly Sts., Phila., plans by Connor & Gravell, archts. and engrs., 262 S. 17 St., Phila., factory and office addn. $1,500,000. CD 7/22.

▲ **South Carolina**—GENERATING PLANT—South Carolina Public Service Auth., Moncks Corner, two 40,000 hp. steam generating plants, near Pinopolis, Berkeley Co. $12,913,065.

▲ **Tex., Port Arthur**—PLANT UNIT—Gulf Oil Corp., Port Arthur, addnl. plant unit. $3,000,000.

Alta., Edmonton—WAREHOUSE—Hudson's Bay Co., 79 Main St., Winnipeg, Man., first unit 75,000 sq. ft. warehouse, $500,000.

▲ **Ont., Cornwall**—FACTORY ADDN., etc.—Canadian Cottons Ltd., 760 Victoria Sq., Montreal, Que., factory addn. and head office bldg. Approx. $1,000,000. CD 9/12/46.

UNCLASSIFIED

Kansas—GAS PIPE LINE—Cities Service Gas Co., First National Bldg., Oklahoma City, Okla., 56 mi. 6 in. gas pipe line at Wichita, Parsons and Newton, Sedgewick Co. $800,000.

▲ **Md., Baltimore**—PIER—Dpt. Army, Dist. Eng., First and Douglas Sts. N. W., Wash. 25, D. C., Hawkins Point Pier, $5,000,000.

Mo., St. Louis—ELEPHANT HOUSE, etc.—City, c/o Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, Zone 3, brick, steel, concrete elephant house and adjacent area, $500,000, concrete, steel lion and tiger pits, $400,000, on Zoo grounds in Forest Park. CD 4/18/46.

† **Wash., Auburn**—RAILROAD SYSTEM—Dpt. Army, Pentagon Bldg., Wash., D. C., rehabilitation railroad sys. serving Army General Depot. $439,295.

▲ **Alberta**—NATURAL GAS LINES, etc.—Northwestern Utilities Ltd., Edmonton, 35 mi. 16-in. pipe as first unit of fourth line from Kinsella-Viking field to Edmonton, $1,100,000; drilling natural gas wells and laying 20.6 mi. field gathering lines, $740,000; 13.4 mi. transmission lines of varying sizes to serve Nameo airport and from airport to St. Alber, $193,000; extens., imprvs. company's distribution system in Edmonton and to other centres, $1,115,000.

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NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
February 20
Massachusetts

BIDS ASKED—BUILDINGS

▲ **R. I., South Kingston**—HIGH SCHOOL—B.A. 2/20—Town, School Bldg. Comn., high school. Hazard Property. $1,252,000. Plans deposit $50. Extended date. CD 1/29.

† **Mass., Boston**—ELECTRIC SERVICE—B.A. 2/21—Navy Dpt., 495 Summer St., Electric Service Bldg. 36 addns., alterations, Proj. 26440. Plans depos.t $10.

LOW BIDDERS—HEAVY CONSTRUCTION

Frank Taylor, Inc., 50 Middle St., Fairhaven, Mass. Low Bidder. $115,608, freight shed, WOODS HOLE (IND. STA. FALMOUTH), MASS. New Bedford—Woods Hole, Martha's Vinyard and Nantucket S S Auth., Pier 9, New Bedford, Mass. Bids Jan. 25.

LOW BIDDERS—BUILDINGS

▲ **B Perrini & Sons Inc.**, 73 Montwait Ave., Framingham, Mass., Low Bidder, $6,287,000. Proj. 3-5, Low-Rent HOUSING, Kensington and Hampton Sts., HARTFORD, CONN. City Housing Auth., 846 Asylum Ave., Hartford, Conn. Bids Jan. 31. CD 1/10.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

New Jersey—B.A. 2/19—Dpt. Navigation & Commerce, 1060 Broad St., Newark, stone jetties in Atlantic Ocean at Beacon and N. Y. Boulevard. $70,000. CD 10/18.

N. J., Belmar—B.A. 2/19—State Dpt. Navigation & Commerce, 1060 Broad St., Newark, rebuilding and lengthening 19 Avenue jetty, $120,000; repairing 16 Ave. jetty, $65,000. Extended date. Claude W. Birdsall, 1700 F. St., Belmar, boro engr. CD 1/26.

N. J., Sea Bright and Rumson—B.A. 2/19—Dpt. Navigation & Commerce, 1060 Broad St., Newark, dredging navigation channels in Shrewsbury River. Plans deposit $25.

N. Y., Rochester—B.A. 2/20—P. Wks. Office, Third Naval Dist., 90 Church St., New York, 7, N. Y., repairing road and reconditioning railroad siding at Naval Industrial Reserve Ordnance Plants 1 and 2, NOY 23891, Spec. 26214.

† **N. Y., West Point**—B.A. 2/20—Public Bldgs. Service 250 Hudson St., New York, 13, N. Y., retaining walls repairs, etc., at Bullion Depository.

N. Y., Port Richmond—B.A. 2/21—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Contr. 1, Port Richmond Intercepting Sewers, Sect. No. 1—Port Richmond Sewage Treatment Works, Richmond Boro, Extended date. Plans deposit $25. CD 1/29.

N. Y., Port Richmond—B.A. 2/21—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, PW-101, Port Richmond Sewage Treatment Works, Contr. A, structures and equip.; Contr. B, electrical work; Contr. C, heating and ventilating; Contr. D, plumbing. Plans deposit $25. Extended date. CD 1/8.

† **N. Y., Niagara Falls**—HEATING FACILITIES—B.A. 2/23—P. Wks. Office, Third Naval Dist., 90 Church St., New York, 7, N. Y., addnl. heating facilities at U. S. Naval Air Station, NOY 22611, Spec. 25205. Plans deposit $10.

BIDS ASKED—BUILDINGS

Pennsylvania—UTILITY BLDG., TOLL PLAZA—B.A. 2/20—Pennsylvania Turnpike Comn., 11 N. Fourth St., Harrisburg, general constr., plumbing, heating, electrical for construction utility bldg. and toll plaza; setting of toll booths and erection of canopy at interchanges listed, Group 1, Contr. 337, Allegheny Valley, T.R. 28, Contr. 338, Butler Valley, T.R. 8, both Allegheny Co.; Contr. 339, Perry Hy, U.S. 19, Butler Co.; Group II, Contr. 340, Beavery Valley, T.R. 18, Beaver Co.; Contr. 341, Gateway, Lawrence Co. Plans deposit $10 each.

Pa., Scotland—ADMINISTRATION—B.A. 2/21—General State Auth., 18 and Herr Sts., Harrisburg, rehabilitation, main admin. bldg. at Pennsylvania Soldiers' Orphan School. $500,000. Plans deposit $10. Frank M. Highberger, 666 Washington Rd., Pittsburgh, Zone 28, archt. A. F. Jones, c/o owner, ch. engr. CD 12/23/49.

▲ **Pa., Scotland**—COTTAGES—B.A. 2/21—General State Auth., 18 and Herr Sts., Harrisburg, two five-unit type cottage bldgs. and one double cottage type bldg. at Pennsylvania Soldiers Orphan Home. $1,100,000. Plans deposit $25. Mitchell & Ritchey, 524 4th Ave., Pittsburgh, archts. A. F. Jones, c/o owner, ch. engr. CD 1/24, under L.B.

N. J., Belvidere—WELFARE HOME—B.A. After 2/21—Bd. Freeholders, Warren Co., Phillipsburg Court House, 2 story, steel, masonry county welfare home. $400,000. Seth Ely, 31 E. Blackwell St., Dover, archt. CD 10/24.

N. J., Hightstown—GRAIN STORAGE, etc.—Bids Asked—Central Jersey Farmers Co-operative Assoc., Inc., Hightstown, N. J., grain storage silo and quonset bldg. $100,000. Daniel A. Pulone, 247 Hamilton Ave., Trenton, N. J., archts. CD 11/24.

Pa., Phila.—GARAGE—Bids Asked—Robert M. Brown, archt., 1728 Spruce St., parking garage for Hallowell Estate, Broad and Chestnut Sts. Approx. $250,000. Gravell & Duncan, 1700 Walnut St., engrs. CD 11/16.

Pa., Phila.—LUMBER YARD SHEDS—Bids Asked—Wm. M. Frost & Co., Welsh Rd. and N. Montague St., lumber yard sheds. Approx. $100,000.

SOON LETS CONTRACT—BUILDINGS

Pa., Lansdale—HOUSING—S. Kendrick Lichty, archt., 830 Lancaster Ave., Bryn Mawr, Pa., soon lets contract State Subsidized Housing for Oakwood Gardens, Inc., Maplewood Apartments, Pottstown. Approx. $500,000. CD 5/5.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ **Lawrence J. Rice, Inc.**, 30 Deepdene Rd., Forest Hills, N. Y., $2,319,000. Low Bidder, reconstruct Manhattan and Bronx approaches of Willis Avenue Bridge over Harlem River, Bronx and Manhattan Boros, NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., New York, 7, N. Y. Bids Jan. 17. CD 1/12.

▲ **Wm. Moore Bldg. Corp. & J. Lopier Constr. Co.**, 75 W. 190 St., New York, 63, N. Y. Low Bidder. $2,184,900. Contr. 3, Unionport Bridge substructures and superstructures north unit, NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., New York, 4, N. Y. Bids Jan. 24. CD 1/12.

Reid Contg. Co., Mutton Hollow Rd., Woodbridge, N. J. Low Bidder. $398,434, Contr. 70, grading, drainage for connecting roads at Rt. 40 and Rt. 16 interchange, grading, drainage service area sites Nos. 1N and 1S, Deepwater, Salem Co., NEW JERSEY. New Jersey Turnpike Auth., 65 Prospect St., Trenton, N. J. Bids Feb. 6. CD 1/25.

Golder Constr. Co., 3352 Market St., Phila., Pa. Low Bidder, $704,250 ADMINISTRATION Bldg. for bridge, NEW JERSEY and PENNSYLVANIA, Delaware River Joint Toll Bridge Comn., 526 Broad St. Bank Bldg., Trenton, 8, N. J. Bids Jan. 30. CD 12/19.

Union Bldg. & Constr. Co., 631 Main Ave., Passaic, N. J. Low Bidder, $791,785, constr. 1.196 mi. Palisades Interstate Parkway Sect. 1E, from Station 26 plus 90 south of Hudson Ave. to point 2,800 ft. south of Hillside Ave., Tenafly and Alpine Boro, Bergen Co., NEW JERSEY. State Hy. Dpt., Trenton, N. J. Bids Jan. 30. CD 1/12.

▲ **Arundel Corp.**, Pier 2, Pratt St., Baltimore, Md. Low Bidder. $586,624, dredging, maintenance, improvs.

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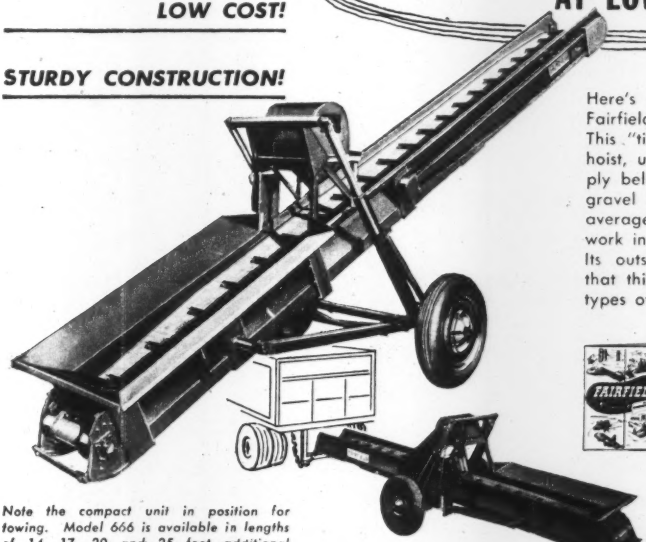

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Baltimore Harbor and channels, Patapsco River, CIVENG 18-020-51-5, BALTIMORE, MD. U. S. Eng., 24 St. and Maryland Ave., P.O. Box 1715, Baltimore 3, Md. Bids Jan. 31.

Jas. Julian, 405 S. Dumont Rd., Elsmere, Del. Low Bidder, $927,497. Contr. 1, approx. 17,500 lin. ft. 30- to 60- concrete sewers, WILMINGTON, DEL. City Street & Sewer Dpt., City Hall, Wilmington, Del. Bids Jan. 30. CD 12/29.

LOW BIDDERS—BUILDINGS

Branna Constr. Co., 406 Bessemer Bldg., Pittsburgh, Pa., Low Bidder. $868,000, 1 and 2 story, 270x349 ft., brick on tile JUNIOR HIGH SCHOOL, North Versailles Twp., near McKEESPORT, PA. North Versailles Twp. Auth., 1013½ Argo St., East McKeesport, Pa. Bids Jan. 31. CD 1/23.

Mercer County Housing Auth., Sharon, Pa. rejected bids Dec. 14, 16 brick APARTMENTS, containing 100 units in Quimby-Malleable Sts., SHARON, PA. L. B. $830,300. CD 1/4, under LB.

Jos. F. Nebel Co., 2142 P. St. N. W., Wash., D. C. Low Bidder. $400,000. 1 and 2 story, 100x280 ft., brick, cinder block, concrete, steel SCHOOL & CONVENT, KENSINGTON, MD. Holy Redeemer Church, Rev. Stephen J. Hogan, pastor, 22 Prospect Ave., Kensington, Md. Donald S. Johnson, 1179 New Hampshire Ave. N. W., Wash., D. C., archt.

CONTRACTS—HEAVY CONSTRUCTION

▲ Lasker-Goldman Corp., 50 E. 42 St., New York 17, N. Y. Contract Awarded. $1,869,522. Memorial HIGH SCHOOL, VALLEY STREAM, N. Y. Bd. Educ., Central School Dist. 1, Valley Stream, N. Y. Bids Dec. 11. CD 12/1.

CONTRACTS—BUILDINGS

Eugene Higgins, Inc., 610 Third Ave., New York, N. Y. Contract Awarded. $819,910, SCHOOL, Main St., HUNTINGTON, N. Y. Bd. Educ., Union Free School Dist. 3, Huntington. Bids Dec. 13. CD 12/28, under LB.

▲ Cuthane Constr. Co., Edgewood Hills, Wilmington, Del. Separate Contracts. Approx. $6,000,000. RESIDENTIAL DEVELOPMENT, Wooton Estate, BRYN MAWR, PA.

Paul Glenn, 17 S. Dock St., Sharon, Pa. Contract Awarded, $775,618. steel City Terrace, 17 bldgs., 100 HOUSING units, FARRELL, PA. Housing Auth. of Mercer Co., Mercer, Pa. Bids Dec. 8, awarded Jan. 26. CD 12/15, under LB.

▲ Navarro Corp., 6219 Broad St., Pittsburgh, Pa., Contract Awarded. $1,250,000, 198 family federal HOUSING, Proj. PA5-94, McKEESPORT, PA. Housing Auth. of McKeesport, McKeesport, Pa. CD 1/29, under LB.

Daniel A. Dintenfass Co., 6905 Castor Ave., Phila., Pa. Separate Contracts. Approx. $750,000. RESIDENTIAL DEVELOPMENT, Arbor and C Sts., PHILA., PA.

Towne & Country Real Estate Corp., 20 E. Market St., West Chester, Pa. Separate Contracts. Approx. $300,000. RESIDENTIAL DEVELOPMENT, Hessian Hill Tract, KENNETT SQUARE, PA. John Randolph Suydam, Paoli, Pa., archts.

▲ Blaw Knox Co., Chemical Parts Div., 321 Pennsylvania Ave., Pittsburgh, Pa. Owner Builds. $1,000,000. 3 story, bsmnt., 85x125 ft. OFFICE and Parking, PITTSBURGH, Pa.

Geo. A. Fuller Co., First National Bank Bldg., Pittsburgh, Pa. Contract Awarded, Approx. $500,000. 3 story, 300x500 ft., brick, concrete WAREHOUSE, PITTSBURGH, PA. H. J. Heinz Co., N. S. Pittsburgh, Pa. CD 12/10/48.

Costanza Constr. Co., 225 E. Redwood St., Baltimore 2, Md. Contract Awarded. $533,398. 1 story, 69x263 ft., stone SCHOOL 88 addn. Wildwood Parkway, BALTIMORE, MD. City, Bureau Bldg. Constr., R. E. L. Williams, engr., 410 Municipal Bldg., Baltimore 2, Md. Awarded Jan. 31. CD 1/30, under LB.

▲ Consolidated Eng. Co., 20 E. Franklin St., Baltimore 2, Md. Contract Awarded. $2,500,000. 95x106x211 ft., concrete, steel, brick MEDICAL RESEARCH BLDG. 95, 601 N. Broadway, BALTIMORE, MD. Johns Hopkins Hospital, 600 N. Broadway, Baltimore, Md. Jas. R. Edmonds Jr., 130 W. Hamilton St., Baltimore, Md., archt. CD 8/31/45.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

February 20
Virginia

STREETS AND ROADS

February 21
Louisiana

March 7
Louisiana

S. C., Greenwood—B.A. 2/20—City, 1 m.g. concrete clear water well. Wiedman & Singleton, Box 1878, Atlanta, Ga., engrs. CD 5/5/48.

† S. C., Charleston—B.A. 2/21—Officer Charge of Construction, P. O. Box 365, Naval Base, Charleston, dredging adjacent to piers a maxmum depth of 24 ft. at Naval Minecraft Base, NOY 24187, Spec. 26499. Plans deposit $10.

Va., Orange—B.A. 2/21—Town, Town Office, sewage treatment plant and sewers, $175,000. R. Stuart Royer & Assocs., 401 Virginia Bldg., Richmond, engrs.

† Va., Quantico—FIRE ALARM SYS.—B.A. 2/21—Pub. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., fire alarm sys. at Marine Corps School, Contr. NOY-14223, Spec. No. 19631.

Fla., Sneads—B.A. 2/23—Town, drilling water well. Plans deposit $10. J. B. McCrary Co., 22 Marietta St., Atlanta, Ga., engrs.

▲ Tenn., Clarksville—B.A. 2/27—City, WW expansion incl. 4 m.g. per day water treatment plant on Seven-Mile Ferry Rd.; low lift pump station, river intake, equip., etc. Approx. $1,000,000. CD /17.

Tenn., Hunland—B.A. 2/27—City, WW sys. Plans deposit $65. S. M. McMurray Eng. Co., 819 Nashville Trust Bldg., Nashville, engr. CD 7/24.

BIDS ASKED—BUILDINGS

Ga., Brunswick—HOUSING—B.A. 2/20—Brunswick Housing Auth., Brunswick, Projects GA9-3 and GA9-4, 200 housing units. Extended date. Abreu & Robeon, 22 Marietta St. Bldg., Atlanta, archts. CD 1/17.

La., Harvey—SCHOOL—B.A. 2/21—Jefferson Parish School Bd., Gretna, school. Plans deposit $30. Sporl & Maxwell, 401 Vincent Bldg., New Orleans, archts.

La., Marrero—SCHOOL—B.A. 2/21—Jefferson Parish School Bd., 519 Huey P. Long Ave., Gretna, Walkertown Colored High School. Plans deposit $30. Sporl & Maxwell, 401 Vincent Bldg., New Orleans, archts. CD 10/5/50.

† Tenn., Oak Ridge—DWELLINGS—B.A. 2/21—U. S. Atomic Energy Comn., P. O. Box E, Attention: R. J. Dunbar, Engineering Div., Oak Ridge, rehabilitation of 212 temporary dwelling units, Inv. No. 401-51-15 A. Plans deposit $25.

Ala., Union Springs—WAREHOUSE, etc.—B.A. 2/22—Dixie Electric Co-operative, Union Springs, warehouse and office. Plans deposit $10. Southern Eng. Co., 1000 Crescent Ave. N. E., Atlanta, Ga., archts. CD 9/27/49, under Alabama.

Ala., Demopolis—WAREHOUSE, etc.—B.A. 2/23—Black Warrior Electric Co-operative, Demopolis, warehouse and office. J. Paul Gilmore, Farm Security Bldg., Montgomery, archts. Extended date. CD 1/17.

Fla., Miami—CHURCH—B.A. 2/23—Rader Memorial Temple Methodist Episcopal Church, c/o Steward & Skinner, archts., 223 S. E. 1 St., church.

Ky., Middlesboro—WAREHOUSE—B.A. 2/23—Streitman Biscuit Co., Mariemont, O., 1 story, 10,000 sq. ft. brick, concrete warehouse, $100,000. Walter C. Wagner & Joseph Potts Fincastle Bldg., Louisville, archts.

Miss., Biloxi — SCHOOL — B.A. 2/23 — Biloxi Separate School Dist., Biloxi, West End School. Plans deposit $25. I. Daniel Gehr, Old Peoples Bank Bldg., archt. CD 5/10/50.

† Tenn., Oak Ridge—LABORATORY—B.A. 2/23—U. S. Atomic Energy Comn., P. O. Box E, Attention R. J. Dunbar, Engineering Div., Oak Ridge, construct. Y-12 Laboratory Bldg. No. 9995, Unit 1, Inv. No. 401-51-14 A. Plans deposit $35. CD 8/12/48.

Va., Lexington—INSTITUTE BLDGS.—B.A. 2/23—At office Supt. Virginia Military Institute, science bldg. at Virginia Military Institute, $400,000. CD 11/14.

Va., Warrenton—SCHOOL—B.A. 2/23—At office Supt. Schools, Fauquier Co., Warrenton Consolidated Colored High School, $500,000. Plans deposit $25, Smithey & Boynton, 112 W. Kirk Ave., Roanoke, archts.

Fla., Bradenton — HOSPITAL — B.A. 2/26—Bd. Comrs. Manatee Co., Bradenton, Manatee Veterans Hospital. Plans deposit $50. Bail, Horton & Assoc., Bradenton, archts. CD 10/17.

† N. C., Camp Lejeune—SHOP—B.A. 2/26—Pub. Wks. Office, Bldg. 1005, Marine Barracks, Camp Lejeune, Engineer Equipment Maintenance Shop (E-1) for Second Engineer Battalion at Marine Barracks, Spec. 26332. Plans deposit $10.

† N. C., Camp Lejeune—RIGGING SHOP, etc.—B.A. 2/26—Pub. Wks. Office, Bldg. No. 1005, Marine Barracks, Camp Lejeune, Rigging Shop S-10 for second shore party battalion, Tadnot Point at Marine Barracks, Spec. 26351; Engineering Company Bldg. (E-6) and area floodlighting and secondary electrical distr. at Marine Barracks, Spec. 26535. Plans deposit $10 each.

Ala., Stevenson—WAREHOUSE, etc.—B.A. 2/27—North Alabama Electric Co-operative, Stevenson, warehouse and office. Plans deposit $25. Southern Eng. Co., 1000 Crescent Ave. N. E., Atlanta, Ga., archts. CD 4/5/49, under Unclassified, Alabama.

La., Chalmette—SCHOOL—B.A. 2/27—St. Bernard Parish School Bd., school. Plans deposit $25, Wm. R. Burk, Pan American Bldg., New Orleans, archt. CD 10/30/50.

▲ Tenn., Nashville—LIBRARY—ARCHIVES—B.A. 2/27 State, Nashville, state library—archives bldg. $2,500,000. Extended date. H. C. Parrent, Jr., 146 4th Ave. N. archt. CD 1/4.

LOW BIDDERS—HEAVY CONSTRUCTION

Troup Bros., Inc., 4151 S. Dixie Hy., Miami, Fla. Low Bidder. $998,179. East-West Runway, runway and taxiway extensions at Miami International Airport, MIAMI, FLA. Dade Co., Court House, Miami, Fla. Feb. 1. CD 1/23.

Dyson & Co., 806 W. Romona St., Pensacola, Fla. Low Bidder. $181,250. Administration bldg. at Pensacola Municipal Airport, PENSACOLA, FLA. City, City Hall, Pensacola, Fla. Bids Jan. 30.

LOW BIDDERS—BUILDINGS

Nielson Constr. Co., Harrisonburg, Va. Low Bidder. $884,093, OFFICE and HEALTH CENTER, HARRISON, VA. Rockingham Co., Harrisonburg, Va. Louis W. Ballou & Charles C. Justice, 106 E. Cary St., Richmond, archts.

Harvey & Elliott, West Bldg., Rome, Ga. Low Bidder, $135,950. RESEARCH LABORATORY, ROME, GA. Dpt. P. Health, State Office Bldg., Atlanta, Ga. Bids Jan. 30. CD 1/11.

Andrew, Dawson & Shenessey, Anniston, Ala. $355,626. Low Bidder, Cobb Avenue HIGH SCHOOL Addn., ANNISTON, ALA. City, Anniston, Ala.

▲ **J. A. Jones Constr. Co.**, 133 Ellis St. N.E., Atlanta, Ga., Low Bidder. $1,959,200. WOMEN'S DORMITORY, AUBURN, ALA. Alabama Polytechnic Institute, Auburn, Ala. Bids Jan. 30. CD 12/13.

† **Brice Bldg. Co.**, 1021 2 Ave. N., Birmingham, Ala. Low Bidder, $314,424, TRANSPORTATION GARAGE, MUSCLE SHOALS, ALA. Tennessee Valley Auth., New Sprankle Bldg., Knoxville, Tenn. Bids Jan. 26.

M. T. Reed Constr. Co., Box 1066, Jackson, Miss. Low Bidder. $819,333. North Greenwood SCHOOL, Broad Street Elementary-High School, GREENWOOD, MISS. Greenwood Separate School Dist., Greenwood, Miss. Bids Jan. 25. CD 1/5.

▲ **T. Miller & Sons**, Box 921, Lake Charles, La. Low Bidder. $1,639,562. 100 bed HOSPITAL, LAKE CHARLES, LA. Lake Charles Memorial Hospital Assn., Commerce Bldg., Lake Charles, La. Bids Jan. 31. CD 12/18.

▲ **Cowan Lumber & Planing Mill Co.**, 1419 Clinton St., Nashville, Tenn. Low Bidder. $1,640,000. 200 HOUSING UNITS, NASHVILLE, TENN. Nashville Housing Auth., 701 N. 6 St., Nashville, Tenn. Bids Jan. 25. CD 1/10.

CONTRACTS—HEAVY CONSTRUCTION

Charleston Contr. Co. and **Howard Price & Co.**, 3 Spring St., Charleston, W. Va. Contract Awarded, $949,281. c. conc. and guardrail 2.052 mi. Charleston-Tyler Creek Road (U. S. 35) Fed. Aid Urban Proj. FU-290 (3), Kanawha Co., WEST VIRGINIA. State Rd. Comn., Charleston, W. Va. Bids Jan. 30. CD 1/16.

▲ **MacDougald Constr. Co.**, Northside Dr. N. W., Atlanta, Ga., Contract Awarded. $1,594,574. Northeast-Southwest runway at Atlanta Municipal Airport, final runway under present expansion, ATLANTA, GA. City, Atlanta, Ga. Awarded Feb. 5. CD 6/28/45.

▲ **Arthur Pew Constr. Co.**, Theater Bldg., Atlanta, Ga. Contract Awarded, $1,015,797. Div. 1; S. J. Curry & Co., Albany, Ga., $543,700. Div. 2; sanitary sewers imprvs., LA GRANGE, GA. City, La Grange, Ga. Bids Jan. 30. CD 12/13.

Polk Constr. Co., Lakeland, Fla. Contract Awarded, $922,554, street imprvs., BARTOW, FLA. City, Bartow, Fla. Bids Dec. 20. CD 1/3, under LB.

▲ † **Bateson-Stolte Co.**, Irwin-Keasler Bldg., Dallas, Tex. Contract Awarded, $11,974,392. Demopolis Lock and Dam, ALABAMA. U.S. Eng., P.O. Box 1169, Mobile 7, Ala. Bids Jan. 30. CD 1/3.

▲ **Talbert & Brown Contractors, Inc.**, Meridian, Miss., Contract Awarded, $81,794, est. $72,500. grading 5.66 mi. State Hy. 397, Proj. S 137 (2), Kemper and Winston Counties***Dickerson & Bowen, Brookhaven, Miss., $178,011, est. $252,000, 13.085 mi. State Hy. 44, Proj. F 046-1 (1), Franklin Co.*** Pigford Bros. Constr. Co., Hy. 11 S, Meridian, Miss., $209,898, est. $175,000, 8.469 State Hy. 26, Proj. F 282 (6), Stone Co.***W. R. Fairchild, Hattiesburg, Miss., $231,521, est. $193,500, 8.258 mi. State Hy. 42, Proj. S 48 (4), Perry and Green Counties***King Constr. Co., Taylorsville, Miss., $154,109, 8.411 mi. State Hy. 37, Proj. S 354 (1), Smith Co.***Linwood Smith, Lake Village, Ark., $196,928, est. $209,000. 7.615 mi. State Hy. 25, Proj. F 040 (3) Itawamba Co.***M. & W. Constr. Co., Tupelo, Miss., $71,580, 0.183 mi. State Hy. 4, Proj. SG 213 (3), Marshall Co.***J. H. Moon, Port Gibson, Miss., $337,753, est. $315,000, 11.979 mi. State Hy. 2018, Proj. F 039 (1), Claiborne and Copiah Counties***L. S. Reed, Belzoni, Miss., $182,465, 7.06 mi. State Hy. 1, Proj. F 043-3 (1),

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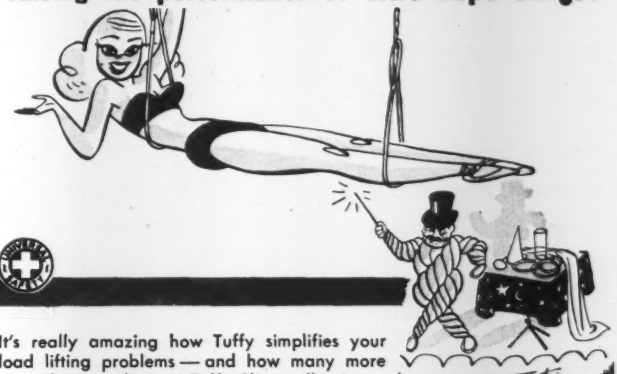

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Coahoma Co.***J. E. Russell, Mount Olive, Miss., $67,465, est. $65,000, 5.017 mi. State Hy. 21, Proj. S 356 (1), Scott Co.***O. J. Stanton, Greenwood, Miss. $191,278, 5.171 mi. State Hy. 4, Proj. S 275 (6), Tate Co.***Worsham Bros., Corinth, Miss. $415,691, est. $355,000, 13.27 mi. State Hy. 25, Proj. F 040-2, Tishmingo Co.***Gex & Cue, Bay St. Louis, Miss., $169,711, 6.206 mi. Proj. F 62 (3), Wilkinson Co., $131,102, 7.755 mi., Proj. S 104 (2), Pearl River Co., $93,240, 4.828 mi. State Hy. 55 and 57, Proj. S 83 (2), S 83 (3) and S 353 (1), Harrison Co., MISSISSIPPI State Hy. Dpt., Jackson, Miss. Grand total $2,712,546. Awarded Jan. 30. CD 1/22.

CONTRACTS—BUILDINGS

Campbell Constr. Co., 3255 Goldner St., Detroit, Mich. Contract Awarded. $780,000. new parts DEPOT and sales OFFICE, Lewis St. off Williamsburg Rd., RICHMOND, VA. Ford Motor Co., 856 Penobscot Bldg., Detroit, Mich.

Doyle & Russell, Central National Bank Bldg., Richmond, Va., Contract Awarded, $350,000, WAREHOUSE and OFFICE, Broad St. Rd., RICHMOND, VA. Thalhimer Bros., Broad at 6 Std., Richmond, Va.

Charles W. Barger, Lexington, Va. Contract Awarded. $518,877. South Side SCHOOL, STAUNTON, VA. City School Bd., Staunton, Va. Bids Jan. 2. CD 12/15.

▲ Lynch Pugh & Corson, Inc., 75 University Ave. Morgantown, W. Va. Contract Awarded. $1,483,000. TUBERCULAR BLDG., Hopemont State Hospital, HOPEMONT, W. VA. W. Va. Bd Control, Capitol Bldg., Charleston, W. Va. Bids Nov. 22. CD 12/7, under LB.

Knox Georgia Homes, Inc., Thomson, Ga. Owner Builds, $467,500. 55 HOMES, ATLANTA, GA.

Knox-Georgia Homes, Inc., Thomson, Ga. Owner Builds, $900,000. 100 additional HOMES in Fleming Heights Section, AUGUSTA, GA.

Starr Constr. Co., 1440 N.W. 21 St., Miami, Fla. Contract Awarded, $514,378, 79 APARTMENT UNITS, MIAMI, FLA. Pioneer Development Co., c/o contractor.

Housing Engineers of Florida, 1749 S.W. 3rd Ave., Miami, Fla. Owner Builds, $300,000. 32 HOMES, MIAMI, FLA.

A. P. Hennessey & Son, Inc., 826 16 St. N., St. Petersburg, Fla. Contract Awarded, $300,000, Y.W.C.A. BLDG., ST. PETERSBURG, FLA. Y.W.C.A., 338 1 Ave. N., St. Petersburg, Fla. Bids Jan. 16. CD 1/11.

W. M. Craig Jr., 1238 E. R. R. St., Gulfport, Miss. Contract Awarded. $400,000. DEPARTMENT STORE, GULFPORT, MISS. M. Salloum, 2601 14th St., Gulfport, Miss.

Howie Constr. Co., 720 Bratton St., Jackson, Miss. Contract Awarded. $650,485. Emba French, Viola E. Lake and Laura R. Lester SCHOOLS, JACKSON, MISS. Jackson Separate School Dist., Jackson, Miss. CD 8/11/50.

Pines Constr. Co., 5525 Downman Rd., New Orleans, La. Owner Builds. $475,000. 58 HOMES, NEW ORLEANS, LA. CD 8/3.

Sunset Homes, 224 Warrington Dr., New Orleans, La. Owner Builds. $350,000. 40 HOMES, NEW ORLEANS, LA.

Burdett & Land, Richmond, Ky. Contract Awarded. $550,000. 1 story, brick, 30,000 sq. ft. process rubber moulding PLANT, BEREA, KY. Berea Rubber Co., Berea, Ky. Wallace Hatch, Hippodrome Bldg., Cleveland, O., archt. The Austin Co., 16112 Euclid Ave., Cleveland, O., engr. Awarded Jan. 31.

Emory & Richards, 2117 N. Central St., Knoxville, Tenn. Contract Awarded, Approx. $300,000. HIGH SCHOOL alterations, addns., KNOXVILLE, TENN. Knoxville Catholic High School, c/o Baumann & Baumann, archts., 813½ Market St., Knoxville, Tenn. Bids Jan. 23. CD 1/10.

Southern Builders, Exchange Bldg., Memphis, Tenn. Contract Awarded, $300,000, 4 store, brick, steel COMMERCIAL BLDG. MEMPHIS, TENN. Louis Kotler, Lauderdale and Poplar Sts., Memphis, Tenn. James H. Perrell, Court Ave., Memphis, Tenn., archts. Awarded Feb. 1.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
February 20
Wisconsin

O., Rossford—B.A. 2/20—Village, Mayor Charles Appt, Rossford, 2 sewage pump stations, 1,493 ft. 12- to 24-in. sewers, 1,075 ft., 8 in. c. i. or asbestos cement force main; 12, 14, or 16 in. c. i. or asph. cement force main for 12,790 ft. $260,000. Plans deposit $20. Finkbeiner, Pettis & Strout, 518 Jefferson St., Toledo, engrs. CD 11/16.

Ill., Chicago—CONVENT—B.A. 2/21—Our Lady of Angels Parish, 3819 W. Iowa St., Zone 24, 3 story, bsmnt. convent, $300,000. Barry & Kay, 53 W. Jackson St., Zone 4, archts.

† Michigan—B. A. 2/21—U. S. Eng., 2015 Cadillac tower, Detroit, rip rapping banks of canal, Mount Clemens. CD 6/9/44.

Mich., Midland—B. A. 2/21—City, Weyant Pangborn, clk., Contr. 1, 20,000 cu. yd. excav., 9,800 cu. yd. sand fill, 8,543 ft. curb and gutters, 12,585 sq. yd. grav. pass, 54,458 sq. ft. new walks Homestead Addn. 3, various streets; Contr. 2, surf. with 1,393 tons Laykold asph. surf. Plans deposit $10 refundable.

Ind., New Castle—B. A. 2/26—Bd P. Wks, Mayor H. L. Meadows, Chn., City Hall, WW imprvs., water main extens., 1 m.g. elevated steel tank, new pumps, aerating tower, steel tank, reservoir. $497,904. G. M. Williams, 415 Archts & Bldrs Bldg., Indianapolis, Zone 4, consult. engr. CD 12/26.

BIDS ASKED—BUILDINGS

Ill., Downers Grove—SCHOOL—B.A. 2/20—School Dist. 58, c/o High School, three 1 story schools, 1 at Oakwood and Grand Sts., 1 at Jefferson and Hillcrest Sts., other at Highland Ave. at city limit. $450,000. Perkins & Will, 309 Jackson Blvd., Chicago, Zone 6, archts. CD 6/6.

Wis., Kimberly—SCHOOL—B.A. 2/20—Bd. Educ., Kimberly, 1 story, 120x300 ft., concrete, steel, brick, tile school remodel and addn. Plans deposit $25. R. N. LeVee & Assocs., 203 E. College Ave., Appleton, archts.

Ill., Chicago—GARAGE—B.A. 2/21—Hertz Drive Urself System, Inc., 41 and Wallace Sts., Zone 9, 45,000 sq. ft., 180x245 ft., garage, $325,000. Everett F. Quinn, 134 N. LaSalle St., Chicago, Zone 2, archt.

Mich., Alpena—SCHOOLS—B. A. 2/21—Alpena Twp. School Bd., Alpena, 2 brick, steel schools. Plans deposit $25 refundable to bidders, $15 to others, Scott & Bryselbout, Alpena, archts. CD 11/30/44.

▲ Mich., Ionia—HOSPITAL—B.A. 2/21—State, A. N. Langius dir State Bldg. Dpt., 115 State Office Bldg., Lansing, 3 story, bsmnt., brick, steel, concrete women's bldg. at Ionia State Hospital, $1,250,000. Bids 11/10 rejected. H. E. Beyster Corp., 2100 Industrial Bldg., Detroit, archts. CD 10/17.

Mich., Ionia—POWER PLANT—B.A. 2/21—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, 1 story, brick, steel, concrete turbo-generator and switch gear power plant, H. E. Beyster Corp., Industrial Bank Bldg., Detroit, Zone 26, engrs. CD 8/25.

Mich., Lapeer—LAUNDRY—B. A. 2/21—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, 1 story, brick, masonry laundry, Frantz & Spence, 118 N. Washington Ave., Saginaw, archts. E. R. Little Co., 1806 Kales Bldg., Detroit, engrs.

O., Yellow Springs—SCHOOL—B.A. 2/24—Bd. Educ., Yellow Springs, school, $270,000. E. C. Landberg & Assoc. 114 Garfield Pl., Cincinnati, archts. CD 7/20.

Mich., Bay City—ELECTRIC SUB-STATION—B. A. 2/26—City, George MacPhail, mgr., Contr. 2, electric sub-station, transformer tower and accessories, Saginaw and Tenth Sts. Plans deposit $10. Ayres, Lewis, Norris & May, 506 Wolverine Bldg., Ann Arbor, engrs. CD 9/29/50.

Wis., Brillion—FACTORY—Bids Asked—Brillion Iron Works, Brillion, 1 story L-shaped, 26x195 ft., 30x156 ft., concrete, steel, brick, blocks factory addn. Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, archts. CD 12/19.

LOW BIDDERS—HEAVY CONSTRUCTION

State Div. Hys., Springfield, Ill., rejected bids Jan. 19, furnishing structural steel for railroad subway on Ill. Rte. 122 in Chicago, Cook Co., ILLINOIS. L. B. $106,781. CD 1/24, under LB.

State Div. Hys., Springfield, Ill., rejected bids Jan. 19, bit. resurf. and widn. 3.24 mi., c. conc. widn. 0.85 mi. Ill. Route 122, Chicago, Cook Co., ILLINOIS. L. B. $382,952. CD 1/24, under LB.

Union Contg. & Eng. Co., 30 N. LaSalle St., Chicago 2, Ill. Low Bidder, $654,629, auxiliary outlet sewers, 64 St., CHICAGO, ILL. City, City Hall, Chicago, Ill. CD 3/19/45.

LOW BIDDERS—BUILDINGS

▲ Wm. P. Jungclaus Co., 825 Massachusetts Ave., Indianapolis, 4, Ind. Low Bidder $856,650, general constr. 2 story, MEMORIAL HOSPITAL WINGS, and 1 story HEATING PLANT all brick, rein.-con., Burton Heating & Plumbing Co. Rochester, Ind., $308,160, heating, plumbing and ventilating. COLUMBUS, IND. Bd. Comrs. Bartholomew Co., Court House, Columbus, Ind. Bids Jan. 20. CD 1/5.

▲ Federal Constructors, Inc., 173 W. Madison St., Chicago, Ill Low Bidder, $1,269,400, general contract WOMEN'S DORMITORY GROUP buildings at Southern Illinois University, CARBONDALE, ILL. State Capitol, Springfield, Ill. BIDS Jan. 30. CD 1/9.

Peter Hansen & Sons, 9505 S. Prospect St., Chicago, 20, Ill. Low Bidder, $361,000, SCHOOL, OAKLAWN, ILL. Bd. Educ., School Dist. 123, Oaklawn, Ill. Bids Jan. 15. CD 1/4.

Oscar Heinicke, 1004 Vandalia St., Collinsville, Ill. Low Bidder, $829,200, general constr., brick, concrete, steel junior HIGH SCHOOL, COLLINSVILLE, ILL. Collinsville School Dist., 89, Bd. Educ., Collinsville, Ill. Bids Jan. 25. CD 4/11.

CONTRACTS—HEAVY CONSTRUCTION

Santucci Constr. Co., 5044 Carol St., Skokie, Ill. Contract Awarded. $547,619. 40,000 lin. ft. 16 ft. down to 6 in. water mains, HAMMOND, IND. City City Hall, Hammond, Ind. Bids Jan. 3, awarded Jan. 29. CD 1/17, under LB.

J. C. O'Connor & Sons Inc., 2104 Miner St., Fort Wayne, Ind., Contract Awarded $612,450, c.conc. 5.94 mi. U. S. Route 24, Livingston and Ford Counties, ILLINOIS. State Div. Hys., Springfield, Ill. Bids Jan. 19, awarded Feb. 1. CD 1/24, under LB.

Chicago Heights Coal Co., 27 E. 19 Pl., Chicago Heights, Ill., Contract Awarded, **$888,348**, c. conc. 7.73 mi. U. S. Rte. 45, Iroquois and Kankakee Counties, ILLINOIS. State Div. Hys., Springfield, Ill. Bids Jan. 19, awarded Feb. 5. CD 1/24, under LB.

Louis Garavaglia, Interzone Center Line, Mich. Contract Awarded. **$509,814.** grade separation hy. underpass Grand Trunk Western tracks over U.S. 23, Proj. F X 1 of 25-7-4 C1 (FG 219 11), Genesee Co., MICHIGAN, State Hy. Dpt., Lansing, Mich. CD 2/1 under L.B.

Diggerman, Inc., 14120 Dix-Toledo Sts., Wyandotte, Mich. Contract Awarded. **$113,486.** 2,900 ft. storm drain, sanitary drain, 2,836 ft. 24 in. pipe line, open trench concrete lining, Cherry St. Maple Blvd. etc., MONROE, MICH. City, D. A. Soleau, clk., City Hall, Monroe, Mich. Bids Jan. 22. CD 1/10.

CONTRACTS—BUILDINGS

▲ **John Griffiths & Sons Constr. Co.**, 228 N. LaSalle St., Chicago, 1, Ill. Contract Awarded. **$1,000,000.** 1 story, bsmnt., 100,000 sq. ft. GARAGE and OFFICE, Terre HAUTE, IND. Public Service Co. of Indiana, Terminal Bldg., Indianapolis, Ind. Bids Jan. 11, awarded Jan. 25. CD 12/22.

▲ **Austin Co.**, 510 N. Damen St., Chicago, 10, Ill., Contract Awarded, **$3,000,000**, design and construct FACTORY, BEDFORD PARK, ILL. Mid-States Gummed Paper Co., 2538 S. Damen Ave., Chicago, Ill. Awarded Jan. 26. CD 12/26.

W. E. O'Neil Constr. Co., 2751 Clybourn Ave., Chicago, 47, Ill., Contract Awarded, **$300,000**, 2 story, DIAL EXCHANGE, BLUE ISLAND, ILL. Illinois Bell Telephone Co., 212 W. Washington St., Chicago, 6, Ill. Awarded Jan. 26. C 1/3.

Heidel & Beck, 6335 S. Michigan St., Chicago 37, Ill. Contract Awarded. **$500,000.** 60,000 sq. ft. FACTORY and OFFICE, CHICAGO, ILL. J. J. Tourek, 2100 S. Kilbourn St., Chicago, 23, Ill. Jan. 31. CD 2/6.

Christman Co., 408 Kalamazoo Plaza, Lansing, Mich. Contract Awarded. **$545,600.** 2 story, bsmnt., brick, steel concrete John L. Pierce SCHOOL, FLINT, MICH. City, Joseph A. Anderson, secy., Flint, Mich. Bids Jan. 23. CD 1/10

Northbrook Homes, Inc., 2120 Techy Ave., Northbrook, Ill. Owner builds, **$350,000**, 1 story, bsmnt. thirty-two brick HOMES, NORTHBROOK, ILL. Wm. Smith, 9453 S. Loomis St., Chicago, Zone 20, archts. Awarded Jan. 29.

Owen Ames Kimball Co., 38 Pearl N. W., Grand Rapids, Mich. Contract Awarded. **$800,000.** 4 story, brick, steel, concrete HOSPITAL, GRAND RAPIDS, MICH. St. Mary's Hospital, Bd. Trustees, 250 Cherry St., S. E., Grand Rapids, Mich. Bids Dec. 19. CD 12/19.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

February 20 — Iowa

February 23 — Kansas, Minnesota

STREETS AND ROADS

February 20 — Iowa

February 23 — Kansas, Minnesota

Ark., Fort Smith—B.A. 2/20—U. S. Eng., 300 Broadway, Little Rock, resurf. grav. roads and repairing bridges at Camp Chaffee Inv. Eng. 03-050-51-4.

† **Colorado**—B.A. 2/20—Bureau Reclamation, Dpt. Interior, Bldg. 1-A Denver Federal Center, Denver, furnishing, del. f.o.b. cars shipping point or f.o.b. cars Granby, Colo., gates, hoists, lining, eyebolts for outlet works, Willow Creek Dam, Colorado-Big Thompson, Proj., Spec. DS-3290. L. N. McClellan, ch. engr.

† **Missouri**—B.A. 2/20—U. S. Eng., Box 97, Memphis 1, Tenn., constr. 10,000 lin. ft. bank protection work at Pritchard, (959 AHP), 8,000 lin. ft. at New Madrid Bend, (890 AHP), 8,000 lin. ft. at Linda (881 AHP), 5,000 lin. ft. at Merriwether Bend (875 AHP) on Mississippi River between Pritchard (Mile 959 AHP) and Cottonwood Point (Mile 835 AHP), CIVENG 40-041-51-75.

† **Missouri**—B.A. 2/20—U. S. Eng., 1709 Jackson St., Omaha, Neb., underseepage control facilities along Missouri River near Watson, CIVENG 26-066-51-82. CD 1/22.

Mo., Kansas City—B.A. 2/20—City P. Wks., City Hall, Zone 6, trafficway on 47 St. from Oak St. to Troost Ave., new pavement and curb on Harrison St. from Brush Creek Blvd. to 47 St., etc. $400,000. CD 11/10/47.

▲ **Mo., Kansas City**—B.A. 2/20—City, Dpt. P. Wks., City Hall, Zone 6, resurf. 50 mi. streets, $1,013,501; 25 mi. streets smoothed by heater, 10 mi. repairing and sealed, $80,000, John E. Maring, city engineer. CD 11/10/47.

Mo., St. Louis—B.A. 2/20—City, Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12 and Market Sts., Zone 3, reconstr., repairs to Euclid Ave. viaduct across Wabash R.R. tracks, $60,000. W. R. Crecelius, ch. engr., Bridges & Bldgs., 301 City Hall, engr. Extended date. CD 1/4.

† **Oklahoma**—B.A. 2/20— Soil Conservation Service, c/o F. R. Mangham, ch. engr., 3600 McCart St., Fort Worth, Tex., flood control detention reservoirs, earthfill embankments, on Washita River watershed in Sandstone Creek Watershed, approx. 6 to 9 mi. east of Cheyenne.

† **Iowa**—B.A. 2/21—U. S. Eng., 1709 Jackson St., Omaha, Neb., grading, seeding New Indian Creek Channel, near Council Bluffs, Inv. 83. CD 6/9/44.

Kansas—RURAL DISTRIBUTION LINES—B.A. 2/21—Wheatland Electric Co-operative, Scott City, 287 mi. rural distr. lines, 93.25 mi. conversion, 5.85 mi. retirement Scott and Wichita Counties, $325,000. Frank Horton & Co., Lamar, Mo., engrs.

Mo., Berkeley City (St. Louis 21, P.O.)—B.A. 2/21—City, Ed. A. Walsh, mayor, City Hall, Airport Rd. and Helen Ave., city wide sys. of sanitary trunk and lateral sewers, sewage disposal plant, equip., etc. $500,000. Extended date. George W. Kropp, 8025 Forsyth Bldg., Clayton, St. Louis, Zone 24, Mo., engr. CD 11/22.

† **South Dakota**—B.A. 2/21——U. S. Eng., 1709 Jackson St., Omaha, Neb., main leads and switchgear for Ft. Randall Dam and Reservoir, near Pickstown. CD 5/25/44.

† **South Dakota**—B.A. 2/21—U. S. Eng., 1709 Jackson St., Omaha, Neb., relocation cemetery, Fort Randall Dam and Reservoir Proj., near Lake Andes, Spec. No. CIVENG 25-066-51-75. CD 1/5.

Ark., Pine Bluff—B.A. 2/26—City City Hall,
Proj. 1, trunk line sewer, pumping plant and outfall structures 4.32 mi. 18-42 in. sewer lines;
Proj. 2, 2.65 mi. 8- to 18-in. intercepting sewers, pump. plant and force main;
Proj. 3, 6.94 mi. 8- to 21-in. intercepting sewers, pump. plants, and force main;
Proj. 4, 7.9 mi. 8- to 21-in. intercepting sewers, 2 pumping plants, and force main;
Proj. 5, 12.1 mi. 8- to 21-in. intercepting sewers, pump. plant and force main;
Proj. 6, Florida Street Pumping Station and force main alterations.
Plans Deposit $15. A. E. Heagler, 520 National Bldg., consult. engr. CD 3/11/49.

† **Montana** — TELEPHONE TRANSMITTER RECEIVER SETS, etc.—B.A. 2/27—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., 4 carrier-current telephone transmitter receiver sets, 6 carrier line tuning units, two 115,000 volt and 161,000 volt coupling capacitors, 6 carrier-current line traps, 3,000 lin. ft. coaxial cable, Fort Peck Proj. Spec. DS 3286, L. N. McClellan, Bldg. 1A, Denver Federal Center, Denver, Colo., ch. engr.

† **N. M., Albuquerque**—LANDSCAPING—B.A. 2/27—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash., 25, D. C., landscaping around T.B. Hospital Bldg. 25 for Veterans Administration Hospital, Proj. 13-4020.

† **North Dakota**—TRANSMITTER-RECEIVER SETS—B.A. 2/27—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Bismarck, 2 carrier-current telephone transmitter-receiver sets for Jamestown and Bismarck Sub-stations, Transmission Div. Missouri River Basin Proj., Spec. No. DS-3285.

† **North Dakota**—FIRE ALARM SYSTEM—B.A. 2/27—U. S. Eng., Bismarck, fire alarm sys. for Garrison Dam and reservoir project near Riverdale, Inv. 29. CD 6/1/44.

† **North Dakota**—B.A. 2/27—U. S. Eng., P.O. and Custom Bldg., St. Paul, Minn., gantry crane for Baldhill Dam Proj., Valley City, Inv. 41.

† **Tex., Killeen**—DEFENSE FACILITIES—Bids Asked—U. S. Eng., 606 Santa Fe Bldg., Galveston, defense facilities imprvs. Gray Air Force Base, Forest & Cotton, Praetorian Bldg., Dallas, consult. engrs. Tatum & Quade, 2812 Fairmont St., Dallas, archts. CD 2/2.

▲† **Tex., Lackland Air Base (Br. San Antonio)**—BARRACKS—Bids Asked—U. S. Eng., 606 Santa Fe Bldg., Galveston, 16 barracks. $2,000,000. CD 2/1.

BIDS ASKED—BUILDINGS

Kan., Scott City—SCHOOL—B.A. 2/20—Bd. Educ., school, $320,000, R. L. Hollis, Bitting Bldg., Wichita, archt. CD 6/19/50.

Minn., New Brighton—SCHOOL and CONVENT—B.A. 2/20—St. John the Baptist Church, Rev. M. Matz, New Brighton, 1 story school and convent, $300,000, G. Shifflet, Backstrom & Carter, 17 W. Franklin Ave., Minneapolis, archts. CD 10/26.

Neb., Lincoln—WAREHOUSE, etc.—B.A. 2/20—Griswold Seed Co., 749 N. St., warehouse with offices, $200,000. Davis & Wilson, Stuart Bldg., archts. CD 3/2.

Tex., Lamesa—SCHOOL—B.A. 2/22—Lamesa Independent School Dist., Lamesa, masonry type school; cafeteria. $300,000. Plans deposit $30. Extended date. Wilson & Patterson, 202 Majestic Bldg., Fort Worth, archts. CD 1/8.

† **Montana**—WAREHOUSE—B.A. 2/27—Bureau Reclamation, Dpt. Interior, Canyon Ferry, furnishing, erecting 40x100 ft. metal warehouse, chain-link fence for Canyon Ferry Dam and power plant, Missouri River Basin Proj., Spec. 600C-54, Extended date. L. N. McClellan, Bldg. 1A, Denver Federal Center, Denver, Colo., ch. engr. CD 1/29.

Tex., Austin—WAREHOUSE—B.A. 2/27—Schumacher Co., 400 San Antonio St., warehouse. $350,000. Plans deposit $25. Giesecke, Huehne & Broks, 205 E. 8 St., archts. CD 1/15.

Tex., Mineola—HOUSING—B.A. 2/27—Mineola Housing Auth., Mineola, 40 units of housing. $320,000. Plans deposit $25. Bentley, Broad & Nelson, 228 Reserve Loan Life Bldg., Dallas, engrs. CD 11/13.

† **N. M., Albuquerque**—MILK—B.A. 2/28—Bureau Indian Affairs, Interior Bldg., 19 and C Sts., N. W., Wash. 25, D. C., building for milk handling, pumping equip. at Albuquerque School Dairy.

▲ **Neb., Fort Crook**—HOUSING—Bids Asked—Carl C. Wilson, Inc., City Natl Bank Bldg., Omaha (sponsor), housing for Offutt Air Force Base personnel for Dpt. Air Force, The Pentagon, Wash., D. C. $5,516,835. C. A. Martin, Karbac Block, Omaha, archt. CD 5/5 under CA.

Tex., Baytown—CHURCH—Bids Asked—Memorial Baptist Church, Baytown, Tex., church. CD 2/2.

Tex., Fort Worth—LABORATORY—Bids Asked—Consolidated Vultee Aircraft Corp., c/o Engineering Dpt., Grants Lane, laboratories at Convair Plant, $250,000. Bids 12/15 rejected. CD 1/2.

Tex., Houston—PLANT—Bids Asked—J. M. Huber, Oil and Gas Bldg., addnl. buildings in connection with Carbon black plant. $450,000. CD 1/25.

Tex., Sherman—PLANT, etc.—Bids Asked—Lime Material Company, Sherman, Tex., Proposal 1, plant to manufacture electric distr. equip., $750,000; Proposal 2, warehouse, $100,000; Proposal 3, electric power plant, $150,000. CD 1/26.

▲ **Tex., Waco**—HOUSING—Bids Asked—Dpt. Air Force, Pentagon Bldg., Wash., D. C., construct, manage and finance, 500 family housing units at Connally Air Force Base. $4,500,000. Harry L. Spicer, Amicable Bldg., Waco, Tex., engr. and archt. CD 1/11.

LOW BIDDERS—HEAVY CONSTRUCTION

Bushman Constr. Co., 1801 S. 8 St., St. Joseph, Mo. Low Bidder, **$104,908**, three 41 ft. rein.-con. deck girder spans; **$103,482**, one 29 ft., one 37 ft., one 55 ft. concrete deck girder spans, **$408,043**, one 55 ft. two 74 ft. one 93 ft. two 95 ft. one 118 ft. two 100 ft. beam girder spans all foregoing in Buchanan Co., MISSOURI. State Hy. Comn., Jefferson City, Mo. Bids Feb. 2. CD 1/24.

W. J. Menefee Constr. Co., Sedalia, Mo. Low Bidder, **$471,517**, c. conc., Crawford Co.; **$463,740**, c. conc., Crawford Co.***Land Constr. Co.**, 502 Seneca St., St. Joseph, Mo., **$199,761**. wid'n. c. conc. b. conc., DeKalb and Clinton Counties***C. H. Atkinson Paving Co.**, Chillicothe, Mo., **$71,239**, c. conc., Marion Co.; **$63,523**, c. conc., Monroe, Marion and Ralls Counties***J. E. Dunn Constr. Co.**, 929 Holmes St., Kansas City, Co., **$407,175**, c. conc. 0.447 mi. Buchanan Co.***Reno Constr. Co.**, Overland Park, **$187,398**, wid'n. resurf. b. conc., Platte Co.*** **Illinois Valley Constr. Co.**, Ottawa, Kan., **$202,963**, c. conc., Sect. B, Marion and Ralls Counties*** **Bushman Constr. Co.**, 1801 S. 8 St., St. Joseph, Mo., **$259,929**, wid'n. resurf. c. conc. Platte Co., MISSOURI, State Hy. Comn., Jefferson City, Mo. Bids Feb. 2. CD 1/17 and 1/24.

Benton H. Prock, 1705 Evanston St., Independence, Mo. Low Bidder. **$657,990.** substructure POWER PLANT, circ. water piping, MISSOURI, Northwest Electric Power Co-operative, Cameron, Mo., Lutz & May, Finance Bldg., Kansas City, Mo., engrs. Bids Jan. 24. CD 3/2/50.

▲ **Bushman Constr Co.**, S and Felix Sts., St. Joseph, Mo. Low Bidder. **$1,133,816.** viaduct on U.S. 59 and roadway from east end Missouri River Bridge to 10 St., Buchanan Co., MISSOURI, State Hy. Dpt., Jefferson City, Mo. Bids Feb. 2. CD 1/24.

Rue Constr. Co., Bismarck, N. D Low Bidder, **$99,037**, grav. surf., slope protection, etc., 1.175 mi. State Hy. 11 from Ludden west Proj. No. ERF-2(11). Dickey Co., NORTH DAKOTA. State Hy. Dpt., Bismarck, N. D. Bids Feb. 2. CD 1/16.

Sorkness Constr. Co., Fargo, N. D. Low Bidder, **$248,000**, 53.5 mi. rural distr. lines, McHenry Co., NORTH DAKOTA. Verendrye Electric Co-operative, J. Morley, supt., Velva, N. D. Bids Jan. 30. CD 2/14.

Phelps-Drake Co., 1415 8 St. S.E., Minneapolis, Minn. Low Bidder, **$588,300**, sewage plant, MINOT, N. D. City, Minot, N. D. Bids Jan. 30. CD 1/17.

List & Clark Constr. Co., 729 Railway Exchange Bldg., Kansas City, Mo. Low Bidder, **$503,590**. grading 5.721 mi. Proj. 18-31 FI 573 (7), Geary Co., KANSAS. State Hy. Comn., Junction City, Kan. Bids Jan. 19. CD 2/1 under LB.

▲ **City**, Oklahoma City, Okla., rejected bids Jan. 30, exten. rural urban sanitary sewers, OKLAHOMA CITY, OKLA. L. B. **$1,297,431, est. $1,321,144.** CD 1/23.

† **Atlantic Gulf & Pacific Dredging Co.**, Citizens State Bank Bldg., Houston, Tex. Low Bidder. **$397,903.** dredging Houston Ship Channel, Peggy Lake to Lynchburg, Inv. No. CIVENG 41-243-51-52, TEXAS, U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Jan. 19. CD 1/5.

Whittle Constr. Co., Box 5602, Dallas, Tex. Low Bidder. **$132,988.** 5 mi. 48 in. Creek sanitary sewer line, Ledbetter and Yewpin, DALLAS, TEX. City, Dallas, Tex. Bids Jan. 30. CD 1/10.

Lone Star Steel Co., 4152 Mockingbird Lane, Dallas, Tex. Low Bidder, **$132,614**, 6- to 12-in. c.i. water pipe and fittings, water sys. imprvs.; **Pittsburgh-Des Moines Steel Co.**, Praetorian Bldg., Dallas, Tex., **$119,810**, three 200,000 gal. steel tank and towers, NACOGDOCHES, TEX. City, Nacogdoches, Tex. Bids Jan. 9.

▲ **Western Contg. Corp.**, 400 Benson Bldg., Sioux City, Ia., Low Bidder. **$1,987,483**, pavement and misc. surf. 17.3 mi. Denver-Boulder Toll Turnpike, Colo. Proj. T170-1 (7) near Denver and Boulder, Boulder, Jefferson and Adams Counties, COLORADO. State Hy. Dpt., Denver, Colo. Bids Feb. 1. CD 1/25.

† **U. S. Eng.**, 2132 E. Central Ave., Albuquerque, N. M., cancelled bids to have been opened Jan. 31, landscaping and erosion control, Family Housing Area-Navy (NAV-91) White Sands Proving Ground, U. S. Naval Unit, Serial No. Eng. 29-005-51-14, LAS CRUCES, N.M. CD 1/17.

LOW BIDDERS—BUILDINGS

▲ **James McHugh Constr. Co.**, 6449 S. Park Ave., Chicago, 37, Ill. Low Bidder. **$1,144,000**. 4 story, senior HIGH SCHOOL, 1 story, SHOP and OFFICE and FIELD HOUSE, KEOKUK, IA. Keokuk School Dist. 628 Franklin St., Keokuk, Ia. Bids Jan. 30. CD 1/23.

Huff Bros. Constr. Co., Manhattan, Kan. Low Bidder. **$515,883**. General constr. ENGINEERING BLDG. addn. at Kansas State College, MANHATTAN, KAN. State Bd. Regents, Topeka, Kan. Bids Jan., 23. CD 1/15.

▲ **W. R. Grimshaw Co.**, Kome Bldg., Tulsa 2, Okla. Low Bidder. **$1,111,484**, est. **$1,000,000**. Alexander Graham Bell HIGH SCHOOL, equip., TULSA, OKLA. Bd. Educ., Tulsa, Okla. Bids Jan. 11. CD 1/3.

P. M. Constr. Co., 160 Avery St., Dallas, Tex. Low Bidder. **$888,881**. 114 DWELLING UNITS in 45 bldgs. and admin. bldg., brick, hollow tile concrete slab fdn., CORSICANA, TEX. Corsicana Housing Auth., W. H. Faughn, exec. dir., Corsicana, Tex. Bids Jan. 30. CD 1/9.

▲ **Brown & Root, Inc.**, 4100 Clinton Dr., Houston, Tex., Low Bidder. **$73,500,000**, design and construct steel MILL; American Bridge Co., 1605 Mississippi Valley Trust Bldg., 509 Olive St., St. Louis, Mo., buildings DAINGERFIELD, TEX. Lone Star Steel Co., 4152 Mockingbird Lane, Dallas, Tex. CD 1/25.

† **United Engineers, Inc.**, Ogden, Utah. Low Bidder. (1) **$258,432**, concrete superstructure **Mann Constr. Co.**, Englewood, Colo.; (2) **$270,797**, metal superstructure for SYSTEM DISPATCHERS' BLDG. at Flatiron, Colorado Big Thompson Proj., DC-3272, COLORADO, Bureau Reclamation, Dpt. Interior, Loveland, Colo. Bids Feb. 1. CD 1/9.

▲ **Brickham & Tomberlin**, Alamosa, Colo. Low Bidder. **$483,000**, general contract (utilities) addns., at State Hospital. **H. T. Crabb**, 1048 12 St., Denver, Colo., **$824,616**, plumbing and heating, PUEBLO, COLO. State Hospital, Pueblo, Colo. Warren D. Spengler, 4600 Lakeridge Rd., Denver 14, Colo., engr. Walter De Mordaunt, 718 Thatcher Bldg., Pueblo, Colo., engr. Earl C. Morris, 158 Tempire Bldg., Denver, Colo., archt. Bids Jan. 23.

New Mexico College of Agricultural & Mechanical Arts, State College Bd. Regents, Clovis, N. M. rejected bids Jan. 23 AGRICULTURAL-SCIENCE bldg., CLOVIS, N. M. Will re-advertise.

CONTRACTS—HEAVY CONSTRUCTION

▲ **Koss Constr. Co.**, 205 Farm Bureau Bldg., Des Moines, Ia. Contract Awarded. **$694,474**, paving 14.635 mi. F.9 (7), Johnson Co.; **Hallett Constr. Co.**, Crosby, Minn., **$598,137**, paving 12.599 mi. F.9.19 (4), Buena Vista Co., IOWA State Hy. Comn., Ames, Ia. Bids Jan. 23. CD 1/31, under LB.

Hobe Eng. Co., 2121 E. 4 St., Sioux City, Ia. Contract Awarded. **$120,886**, 240x20 ft. continuous I-beam bridge, 60x20 ft. I-beam bridge, 210x20 ft. I-beam bridge on local road between Sec. 26 and 35-76-37-27-34-76-36 and 29 and 32-76-37, SN-1853, Cass Co., IOWA. State Hy. Comn., Ames, Ia. Bids Jan. 23. CD 1/11.

▲ **J. E. Latta Constr Co.**, 6609 Latta Place, St. Louis 20, Mo. Contract Awarded. **$1,034,295**, altering secondary basins, connecting conduits at Chain of Rocks WW plant on Mississippi River, ST. LOUIS MO. City, Frank J. McDevitt, pres., Bd. P. Service, 304 City Hall, 12 and Market Sts., St. Louis 3, Mo. Awarded Jan. 30. CD 1/30, under LB.

W. B. Carter, 1224 N. Broadway, Wichita, Kan. Contract Awarded. **$126,401**, sewers, WICHITA, KAN. City, Wichita, Kan.

Pennington-Winter Co., Apco Tower, Oklahoma City 2, Okla. Contract Awarded. **$909,946**, 37 mi. 2- to 12-in. water mains, OKLAHOMA CITY, OKLA. City, City Hall, Oklahoma City, Okla. Awarded Jan. 30. CD 1/15 under L.B.

† **H. B. Zachry Co.**, Box 2570, San Antonio, Tex. Contract Awarded. **$505,125**. Battalion motor parks, FORT HOOD, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Awarded Feb. 3. CD 1/10.

Mischer Harris Constr. Co., 5141 Leeland St., Houston, Tex., Contract Awarded. **$45,000**, addnl. water lines, HOUSTON TEX. Chocolate Bayou Estates c/o W. E. Robertson, Sr., 745 First Natl. Bank Bldg., Houston, Tex. CD 6/26.

Recreation Lanes, c/o Fred McGee, 1815 San Jacinto St., Houston, Tex. Owner Builds. **$325,000**, recreation and bowling lane plant, HOUSTON, TEX. CD 1/26.

† **Farnsworth & Chambers, Inc.**, Box 74, Houston, Tex. Contract Awarded. Approx. **$562,000**, reactivation Air Force Base, incl. bldgs., paving, taxiway and runways improv. utilities, SAN MARCOS, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Awarded Jan. 29.

▲ † **J. & J. Constr. Co.**, Petroleum Bldg., Oklahoma City, Okla. Contract Awarded. **$342,140**, constr. Thermopolis-Lovell and Garland Lovell Transmission lines, Missouri River Basin Proj., Spec. DS-3267 WYOMING, Bureau Reclamation, Dpt. Interior, Cody, Wyo. Bids Jan. 17, awarded Jan. 31. CD 1/25, under LB.

J. & J. Constr. Co., Petroleum Bldg., Oklahoma City 2, Okla. Contract Awarded. **$832,004**. 489 mi. rural distr. lines, Columbus Co., NEW MEXICO. Columbus Electric Co-operative, Columbus, N. M. Tynes & Loftin, 1034½ W. Central Ave., Albuquerque, N. M., engrs. Awarded Jan. 17. CD 2/23/50.

BIDS ASKED—BUILDINGS

▲ **Fegles Constr. Co. Ltd.**, Wesley Temple Bldg., Minneapolis, Minn. Contract Awarded. **$30,000,000**. POWER PLANT, MINNEAPOLIS, MINN. Northern States Power Co., 15 S. 5 St., Minneapolis, Minn. Pioneer Engineering & Service Co., 208 S. LaSalle St., Chicago 4, Ill., engr. Awarded Jan. 26. CD 2/16/49.

Bralei Homes Inc., 5 and Vine Sts., North Little Rock, Ark. Contract Awarded, **$775,000**. 110 HOUSING units, 12 St., LITTLE ROCK, ARK., Little Rock Housing Auth., 2800 Battery St., Little Rock, Ark. Bids Jan. 19. CD 1/25, under LB.

J. C. Powell, Winfield, Kan. Contract Awarded. Approx. **$650,000**. General constr. ADMINISTRATION BLDG., WINFIELD, KAN. Trustees Southwestern College, Winfield, Kan. Bids Jan. 26, awarded Feb. 2. CD 1/17.

Gelfton Terrace, c/o Jas. Waldren, Bellaire, Tex. Owner Builds. **$310,000**. 25 DWELLINGS, BELLAIRE, TEX.

Faulkner Building Co., West Bldg., Houston, Tex. Owner Builds. **$425,000**. 48 DWELLINGS, Post Oak and Elm St., BELLAIRE, TEX. Knostman & Webster, 2017 W. Gray St., Houston, Tex., archts.

Boyker & Vest, Bellaire, Tex. Owner Builds, **$425,000**, 50 DWELLINGS, Cedar Shakes, BELLAIRE, TEX. Knostman & Webster, 2017 W. Bray St., Houston, archts. CD 1/26.

Lake Highlands Constr. Co., Buckner Blvd., Dallas, Tex. Contract Awarded. **$770,173**. 36 high-class DWELLINGS, DALLAS, TEX. Fred L. Galbraith, 142 Casa Linda St., Dallas, Tex. CD 1/22.

Bowen & McLaughlin, Southern Ordnance Div., Hitchcock, Tex. Purchase and Hire. **$450,000**. FACTORY, HITCHCOCK, TEX. CD 1/26.

▲ **Stone & Webster Eng. Corp.**, 851 N. Esperson Bldg., Houston, Tex. Contract Awarded. **$10,000,000**. CHEMICAL PLANT addns. constr. electric power and boiler facilities, FREEPORT and VELASCO, TEX., CD 6/15/50 under Freeport; 2/17/47 under Velasco; Purchase and Hire, **$350,000**, reactivating, reconditioning existing Govt. owned magnesium plant, VELASCO, TEX., CD 1/26. Dow Chemical Co., Freeport, Tex. Awarded Jan. 29. CD 6/15.

▲ **The Lummus Co.**, 385 Madison Ave., New York 17, N. Y. Contract Awarded. PLANT to manufacture ethylene, PORT ARTHUR, TEX. Gulf Oil Corp., Port Arthur, Tex.

Cooper-Bessemer Corp., 200 Thomas Ave., Vermont, O. Contract Awarded, **$775,250**, two GENERATING UNITS, ESPANOLA, N. M. Jemez Mountains Electric Co-operative, Inc., Espanola, N. M. Bids Jan. 18. CD 1/30, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
March 1
California

† **Arizona-Nevada** TELEPHONE TRANSMITTER- RECEIVER SETS—B.A. 2/27—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Phoenix, Ariz., carrier-current telephone transmitter-receiver sets for Davis Dam Proj., Spec. DS-3277. L. N. McClellan, ch. engr.

▲† **California**—B.A. 2/27—U. S. Eng., 751 S. Figueroa St., Los Angeles, Los Angeles River Imprvt., Fulton Ave. to Van Nuys Blvd., CIVENG 04-353-51-19, $2,000,000.

Calif., Los Angeles—B.A. 2/27—Bd. Supervs. Los Angeles Co., 501 Hall of Records, 2.14 mi. sanitary sewers in Meeker Ave., El Monte, C.I. 1283, $63,650; 6.17 mi. sanitary sewers in Woodbury Rd., Atladena, C.I. 1270, $204,450. Extended date. C. E. Arondl, co. engr. CD 12/13.

Calif., Los Angeles—B.A. 2/27—Bd. Supervs. Los Angeles Co., 501 Hall of Records, sanitary sewers in Pepper Dr., C. I. 1311, Altadena, $127,350. C. E. Arnold, co. engr.

† **Oregon**—B.A. 2/27—U. S. Eng., 628 Pittock Block, Portland, Zone 5, design, construct, testing and del. f.o.b. railroad cars at Bonneville of 11 items of annunciator equip. with associated relays and cabinets for Bonneville Powerhouse, Bonneville, Serial No. CIVENG 35-026-51-184.

† **Oregon**—B.A. 2/27—U. S. Eng., 628 Pittock Block, Portland 5, Ore., clearing Area "M" in Detroit Dam Reservoir on North Santiam River. Serial No. CIVENG-35-026-51-180.

† **Washington**—B.A. 2/27—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b cars shipping point or f.o.b. cars Othello, Wash., gates frames, for headworks, Potholes East Canal, Columbia Basin Proj., Spec. DS-3316. L. N. McClellan, ch. engr.

† **Wash., Arlington**—POWER SYSTEM, etc.—B.A. 2/27—P. Wks. Officer, Thirteenth Naval Dist., 1611 W. Wheeler St., Seattle, power, phone and street lighting distr. systems at Jim Creek Naval Communications Station, Specs. 26559. Plans deposit $10. CD 7/2/47.

Wash., Pomeroy—B.A. 2/27—City, City Hall, 13,480 ft. 6- to 12-in. sewers, treatment plant. $150,000. Plans deposit $35. G. D. Hall & Assocs., Larson Bldg., Yakima, engrs. CD 2/27/50.

BIDS ASKED—BUILDINGS

Calif., Orange—SCHOOL—B.A. 2/21—Orange School Dist., 370 N. Glasell St., North Cambridge St. School, $300,000. Plans deposit $25. P. O. Davis & P. Haynes, 501 S. Boylston St., Los Angeles, archts. CD 10/9.

▲ **Wash., Seattle**—POWERHOUSE, etc.—B.A. 2/21—City, County-City Bldg., powerhouse, tunnel and appurtenances at Ross Dam. Approx. $2,000,000. E. R. Hoffman, city light supt.

† **Calif., Camp Cooke**—BUILDING ALTERATIONS—B.A. 2/23—Purch. Branch Dpt., Dpt. Army, Camp Cooke, Bldg. T-406 alterations, Guard Detachment area at Branch U. S. Disciplinary Barracks, Inv. No. 04-030-51-39.

▲ **Calif., Los Angeles**—DENTISTRY—B.A. 2/23—University of Southern California, 3551 University Ave., 1 story, rein.-con. School of Dentistry. $1,000,000. Kaufman & Stanton, 627 S. Carondelet St., archts. CD 9/12.

▲ **Calif., Redwood City**—SCHOOL—B.A. 2/23—Sequoia Union High School Dist., Redwood City, San Carolos-Belmont High School $1,320,000. Plans deposit $100. Robt. A. Klassen, 2382 Broadway, Redwood City, and Frank Wynkoop, 129 Laurel St., San Carolos, archts. CD 6/18/48.

† **Wash., Bremerton**—REHABILITATING BLDGS.—B.A. 2/27—P. Wks. Officer, Thirteenth Naval Dist., 1611 W. Wheeler St., Seattle, rehabilitation 4 buildings at Puget Sound Naval Shipyard, Spec. 26141.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ **Baldwin-Lima-Hamilton Corp.**, Chester Pk and Simpson St., Eddystone, Pa. Low Bidder. **$3,009,750**. Three 19,600 hp. hydraulic turbines for Albeni Falls dam, Priest River, Inv. No. 51-29, IDAHO. U. S. Eng., 4735 E. Marginal Way, Seattle, 4, Wash. Bids Jan. 31. CD 1/23.

Westinghouse Electric Corp., Gas & Electric Bldg., Denver, Colo. **$267,000**. Low Bidder, two 43,000 kva. spare transformers for Grand Coulee Power Plant, Columbia Basin Proj., Spec. DS-3257. WASHINGTON. Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo. Bids Jan. 30. CD 1/17.

▲ **J. E. Haddock Ltd.**, 3538 E. Foothill Blvd., Pasadena, Calif. Low Bidder. **$1,879,725**. c. conc. on cement treated subgrade, plant mix surf. on imported base, 4 bridges etc. 1.5 mi. Ramona Freeway near Helen Dr. and Hellman Ave., Los Angeles, Los Angeles Co. CALIFORNIA. State Div. Hys., 120 S. Spring St., Los Angeles, Calif. Bids Feb. 1. CD 1/10.

LOW BIDDERS—BUILDINGS

Wm. C. Crowell Co., 170 E. California St., Pasadena, Calif. Low Bidder. **$428,910**, steel, frame, stucco SCHOOL, Site 1, DOWNEY, CALIF. Paramount School Dist., 15324 California Ave., Paramount, Calif. Bids Feb. 1. CD 1/24.

Moore & Roberts, Inc., 693 Mission St., San Francisco, Calif. Low Bidder. **$507,898**. Constr. SEGREGATION UNIT, Folsom State Prison, FOLSOM, CALIF. State Div. P. Wks. Bldg., Sacramento, Calif. Bids Jan. 30. CD 1/9.

CONTRACTS—HEAVY CONSTRUCTION

▲ **Morrison-Knudsen Co.**, 319 Broadway, Boise, Idaho. Contract Awarded. **$40,000,000**, rein.-con. hydroelectric dam 170 ft. high with crest 500 ft. long at Cabinet Gorge, with four 27 ft. diam. concrete-lined penstocks, powerhouse, diversion tunnels Clark's Fork, IDAHO. Washington Water Power Co., W. 825 First St., Spokane, Wash. Ebasco Services, Inc., 2 Rector St., New York, N. Y., engr. CD 1/1.

Webb & White, 7220½ Melrose St., Los Angeles, Calif. Contract Awarded. **$902,793**, c. conc. and b. conc. paving rein. con. overcrossing Hollywood-Santa Ana Freeway between Grand Ave. and Los Angeles St., Los Angeles Co., CALIFORNIA. State Div. Hys., 120 S. Spring St., Los Angeles, Calif. Bids Jan. 18, awarded Jan. 29. CD 1/25, under LB.

Myers Bros., 307 San Fernando Rd., Los Angeles, Calif. Contract Awarded. **$870,500**. 161 stucco DWELLINGS in Tract 16510, HAWTHORNE, CALIF. Alondia Park, Inc., 3407 San Fernando Rd., Los Angeles, Calif. P. J. Duncan, 4823 Laurel Canyon Blvd., Los Angeles, Calif., archt.

▲ **Grandview Bldg Co.**, 470 S. Beverly Dr., Beverly Hills, Calif. Owner Builds. **$1,060,000**. 81 frame, stucco dwellings in Tract 16072, WHITTIER, CALIF. A. G. Siple, 9507 Santa Monica Blvd., Beverly Hills, Calif., archt.

Kembro Corp., 117 E. Colorado St., Pasadena, Calif. Owner Builds. **$818,660**. 81 stucco DWELLINGS, Janine Dr., Mills Ave., etc., WHITTIER, CALIF. Burge & Roach, 510 Knight Way, La Canada, Calif., archts.

CONTRACTS—BUILDINGS

Pacific Coast Builders, 2530 18 St., San Francisco, Calif., Contract Awarded, **$749,500**, Los Guilicos SCHOOL for Girls, SANTA ROSA, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Jan. 16, awarded Jan. 29. CD 1/25, under LB.

▲ **H. H. Johnson**, 5647 Wilshire Blvd., Los Angeles, Calif. Contract Awarded, **$4,061,030**. 519 stucco DWELLINGS, Acapulco Dr., Avadell Ave., Albertson and Arrola Sts., WHITTIER, CALIF. Hobart-Williams Co., 5647 Wilshire Blvd., Los Angeles, Calif., E. H. Fickett, 5647 Wilshire Blvd., Los Angeles, Calif., archt.

ALASKA

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **Boen-Sealand Constructors**, 3647 Stone Way, Seattle, 3, Wash. Low Bidder, **$1,359,000**, est. $1,665,389, eleven 8-family quarters at Ladd Air Force Base; **$2,977,000**, est. $3,803,650, twenty-five 8-family bldgs at Eielson Air Force Base, ALASKA, U. S. Eng. (APO 942, c/o PM, Seattle, Wash.) Anchorage, Alaska. Bids Jan. 30.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

Alta., Innisfail—B.A. 2/19—H. A. Little, secy.-treas., Town Hall, 7,000 ft. 2- to 6-in. cl. pipe and fittings, valves, hydrants, meters and 1,700 ft. copper service pipe and fittings; two 80 I.G.M. shallow well turbine pumps and motors; 2 pressure filters and chemical feeder; 4,000 ft. vitr. tile sewer fittings, 12 manhole covers and frames and misc. iron works. Plans deposit $25. Haddin, Davis & Brown, 513 8 Ave. W., Calgary, Alta., engrs.

Ont., Sudbury—B.A. 2/19—L. W. Houck, city clk., Sudbury. 12 and 18 in. sanitary sewers, sewage wells, Lake Pumping Station 2. Approx. $60,000.

Ont., Napanee—B.A. 2/20—A. L. Dafoe, town supt., Napanee, supply, erection, painting 250,000 imp. gal. capacity elevated tank of double ellipsidal style, welded, 95 ft. high. Approx. $140,000. L. D. Lee, Grenville Park, Kingston, engr. CD 6/2/48.

Ont., Ottawa—B.A. 2/20—Chairman Bd. Control, City Hall, 500,000 gal. steel ground level reservoir, fabrication, supply, delivery, erection on Montreal Rd., Approx. $150,000; fabrication, supply, delivery, erection 750,000 gal. steel radial type elevated storage tank on Alpine Ave., Approx. $210,000. W. E. MacDonald, c/o owner, engr.

Northwest Territories—B.A. 2/21—Montreal Eng. Co. Ltd., engrs., 344 St. James St. W., Montreal, Que., Mayo River Hydro-Electric Development, for Northwest Territories Power Comm., Motor Bldg., 238 Sparks St., Ottawa, Ont. Approx. $500,000. CD 3/28/45, under Unclass-fied.

▲ **Ont., Centralia**—BARRACK BLOCK, etc.—B.A. 2/21—Defence Constr. Ltd., 395 Fleet St. W., Toronto, barrack room block, 252 men, control tower, supply bldg., Royal Canadian Air Force training station, Approx. $2,000,000. Plans deposit $100. S. M. Connolly, regional engr.

Que., Contrecoeur—B.A. 2/21—R. Fortier, Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., protection wall, $75,000.

Ont., Hamilton—B.A. 2/22—City, J. F. Berry, clk., City Hall, Mountain trunk sewer, and main shaft, 10½ ft. x11½ ft., manholes. Plans deposit $50. Proctor Redfern & Laughlin 11 Jordan St., Toronto, engrs. CD 4/25.

Ont., Toronto—B.A. 2/23—North York Twp., 5145 Yonge St., Willowdale, rein.-con. sewage treatment plant to serve 12,000 people, $225,000. Gore & Storrie, 1130 Bay St., Toronto, engrs. G. H. Baker, twp. engr.

BIDS ASKED—BUILDINGS

▲ **Ont., Toronto**—CENTRAL HEATING PLANT—B.A. 2/20—University of Toronto, Simcoe Hall, Queen's Park, Toronto, substructure and distribution tunnels for central heating plant, $1,500,000. Plans deposit $50. H. G. Acres & Co., 2135 Culp St., Niagara Falls, Ont., engrs. Gordon S. Adamson, 960 Yonge St., archt. CD 1/20/47.

B. C., Vancouver—HOUSING—B.A. 2/23—J. L. Adams, 360 Homer St., 106 housing units in Fraser View housing development. Plans deposit $50. CD 8/18/49.

Newfoundland, St. Johns—HOTEL—B.A. 2/26—G. F. Drummond, archt., c/o Canadian National Rys., 355 McGill St., Montreal, Que. Newfoundland Hotel addns., alterations. Approx. $350,000. Plans deposit $100.

Ont., London—SCHOOL—B.A. 2/27—Rev. J. A. Feeney, 435 Colborne St., Ont., 3 story, 112x190 ft., brick, steel, tile school, Queens Ave. and Colborne St., for Separate School Bd., London, Ont. Approx. $425,000. C. H. Gillin, 284 Dundas St., archt. CD 7/27.

▲ **Ont., Hamilton**—HOSPITAL UNIT—B.A. About 2/28—City, City Hall, main wing 4 story, partial 5 story, 42x419 ft., Y-shaped section hospital unit, 44x88 ft., brick, tile, offices and auditorium. $2,700,000. L. H. Schwindt & Co., 37 King William St., Hamilton, and C. C. Parker, 63 John St., Hamilton, engrs. CD 12/19.

Ont., St. Catherines—HOSPITAL—B.A. 3/5—Superintendent, St. Catherines General Hospital, St. Catherines, new hospital wings, tenders called for mechanical and electrical trades. Plans deposit $50. Govan, Ferguson, Lindsay, Kamminker, Maw, Langley and Keenleyside, 515 Jarvis St., Toronto, and Robert Ian Macbeth, 104 Queen St., archts. CD 1/10/49.

Ont., Windsor—HOSPITAL WING—B.A. 3/5—Metropolitan General Hospital, 1995 Lens Ave., 4 story, ground floor, 144x167 ft., steel, brick, hospital wing. J. C. Pennington, Bank of Commerce Bldg., Ouellette Ave., archt. CD 1/13/50.

Alta., Edmonton—WAREHOUSE, etc.—B.A. 4/1—City, Civic Block, 1 story (ultimately 2 story), full bsmnt., 250x270 ft., rein.-con. warehouse and garage. $500,000. Blakey & Blakey, 10042-109 St., archts.

Alta., Edmonton—FACTORY—Bids Asked—Building Products Ltd., 12208 102 Ave., 120x302 ft., steel factory, with addnl. unit for steam boiler and asphalt preparation equip. $500,000. Rule, Wynn & Rule, 1142 Jasper Ave., archts.

Ont., Toronto—FACTORY—Bids Asked—Powertronic Equipment Ltd., 494 King St. E., 1 story, 72x182 ft., brick, steel, factory, Hollinger and Dohme Aves., East York, Approx. $100,000.

SOON LETS CONTRACT—BUILDINGS

Ont., St. Catherines—FACTORY—McKinnon Industries, Ltd., Ontario St., soon lets contract 2 story bsmnt., 40x140 ft. steel, administration bldg. for automotive parts maker and defense industry, concrete fdn. $175,000. Thomas R. Wiley, 32 William St., archt. CD 10/6.

CONTRACTS—HEAVY CONSTRUCTION

Waterloo County Council, Warden Reev Henry Griffin, County Bldgs., Kitchener, Ont. Own Forces. **$470,800** roads and bridges, KITCHENER, ONT. D. J. Emery, County Bldgs., Kitchener, engr. Awarded Feb. 2.

▲ **Atlas Constr. Co., Ltd.**, 4781 St. Catherine St. W., Montreal, Que., Contract Awarded, Approx. **$4,500,000-$5,000,000**. Lachine Canal Tunnel and approaches thereto in vicinity of Atwater, Ave., MONTREAL, QUE. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids Jan. 12. CD 1/19, under LB.

CONTRACTS—BUILDINGS

▲ **Poole Constr. Co.**, 10503 109 St., Edmonton, Alta. Contract Awarded. **$503,400**. Westminister SCHOOL; **$513,805**, rein.-con., brick, tile McKernan SCHOOL; **Bennett & White**, 11230 81 St., Edmonton, Alta., **$501,255**, rein.-con., brick, tile Strathearn SCHOOL, EDMONTON, ALTA. Edmonton Public School Bd., Civic Block, Edmonton, Alta. Bids Jan. 22, awarded Feb. 3.

▲ **C. A. Pitts**, 67 Yonge St., Toronto, Ont. Contract Awarded, **$2,000,000** 10,000 hp. WATER POWER PLANT, LAURIE RIVER, MAN. Sheritt Gordon Mines Ltd., 25 King St. W., Toronto, Ont. Awarded Feb. 1. H. G. Acres & Co., 2135 Culp St., Niagara Falls, Ont., engrs.

Foundation Co. of Ontario, 1220 Bay St., Toronto, Ont. Contract Awarded. **$500,000**, 1 story, 120x375 ft., COTTON SPINNING BLDG. and 120x200 ft. WAREHOUSE, AJAX, ONT. Monarch Knitting Co. Ltd., Metropolitan Bldg., Toronto, Ont. Hanks & Irwin, 2848 Bloor St. W., Toronto, Ont., archts. Awarded 2/3.

▲ **G. R. Houston Ltd.**, Graham-Horne Bldg., Fort Williams, Ont. Contract Awarded. **$2,400,000**, general constr. 6 story, T-shaped, 46x139 ft., 50x115 ft., rein.-con. HOSPITAL addn. FORT WILLIAM, ONT. McKellar General Hospital Bd., C. R. Stachman, chn., Fort William, Ont. Bids Nov. 6, awarded Feb. 6. CD 1/4, under LB.

▲ **A. Blanchi & Son**, 7415 Quebec Ave., Montreal, Que. Own Forces. Approx. **$2,500,000**. 350 units bungalow type HOUSES, Persillier Blvd. near Gouin Blvd. East, MONTREAL, QUE. P. Colangelo, 3710 Cote St., Montreal, Que., archt.

Leon M. Adler, 75 Manseau Ave., Montreal, Que. Contract Awarded, Approx. **$800,000**, 20-unit HOUSING DEVELOPMENT on site east of Pie IX Blvd., VILLE ST. MICHEL, QUE. Robert Cummings, 1390 Sherbrooke St. W., Montreal, Que. M. M. Kalman, 1200 St. Alexander St., Montreal, Que., archt.

Community Enterprises Ltd., 610 St. James St. W., Montreal, Que. Contract Awarded. Approx. **$600,000**, 61 HOUSES at Army Camp, D.N.D. No. 1-50 (non-Urban), VALCARTIER, QUE. Defence Constr. Ltd., 1247 Guy St., Montreal, Que. M. P. McAndrews, c/o owner, engr. Bids Jan. 19. CD 1/15.

▲ **J. F. Robillard**, 982 Fifth Ave., Verdun, Que. Owner builds. **$1,000,000** BUNGALOWS, Dollard St., VILLE LASALLE, (Postal Dist. Montreal) QUE.

▲ **Smith Bros. & Wilson**, 204 Glengary Block, Saskatoon, Sask. Contract Awarded. Approx. **$7,000,000**. 7 story, full bsmnt., steel HOSPITAL unit, concrete fdns. covering 1.2 acres, SASKATOON, SASKATCHEWAN. Webster & Gilbert, 212 C. P. R. Bldg., Saskatoon, Sask., archts. Awarded Jan. 30. CD 1/31/47.

LATIN AMERICA

BIDS ASKED—HEAVY CONSTRUCTION

Mexico—Secretariat of Hydraulic Resources, Paseo de la Reforma No. 69, Mexico City, Mexico (Dpt. Contracts for Irrigation Works and River Control), receiving bids March 12, earthwork and structures of Canal Alto, Irrigation Dist. of the Yaqui River, State of Sonora. Plans deposit 200 pesos. CD 10/24/50.

(Proposal Advertisements see pp. 107 to 110)

OFFICIAL PROPOSALS

Bids: March 8, 1951 (328)

Runway, Taxiway & Apron of Airport

PUERTO RICO TRANSPORTATION AUTHORITY
ENGINEERING DIVISION

The Puerto Rico Transportation Authority will receive sealed bids for Pavement of Runway, Taxiways and Apron of the Puerto Rico International Airport, Project No. 9-53-001-103, San Juan, Puerto Rico, until 2:00 P. M. (Atlantic Standard Time) on the 8th day of March, 1951, at San Juan, Puerto Rico, at which time and place all bids will be publicly opened and read aloud.

The successful bidder will be required to furnish satisfactory performance and payment bond or bonds.

All bids shall be based on wage rates not less than the minimum wage rates as predetermined by the Secretary of Labor of the United States, schedule of which is included in the Specifications.

Attention is called to the fact that the project is exempted from the 3% Insular Tax on public work contracts.

Proposed forms of contract documents, including plans and specifications, are on file at the office of the Chief Engineer of the Puerto Rico Transportation Authority, at San Juan, Puerto Rico.

Copies of the documents may be obtained by depositing one hundred dollars ($100.00) with the Puerto Rico Transportation Authority for each set of documents so obtained. The amount of the deposit will be refunded to each person who submits formal proposal and returns sets in good condition within ten (10) days after the opening of bids.

However ninety dollars ($90.00) only will be refunded to bona-fide Bidders for extra sets returned and those taking sets and not filing formal proposals.

A set of drawings and specifications will be available for inspection at the Civil Aeronautics Administration Office at 50 7th St. N. E., Atlanta 5, Georgia.

The Puerto Rico Transportation Authority reserves the right to reject any or all bids and waive any informalities in bidding.

A certified check or bank draft payable to the Puerto Rico Transportation Authority, U. S. Government Bonds, or a satisfactory bid bond executed by the bidder and acceptable sureties in an amount equal to (5%) five per cent of the bid shall be submitted with each bid.

José Feliciano
Acting General Manager

Bids: March 13, 1951 (327)

Force Main

CITY OF WILMINGTON, DELAWARE

Sealed proposals for furnishing materials and labor to construct the Force Main, Contract No. 3 of the City of Wilmington's Sewage Treatment Program, will be received from qualified bidders by the Board of Directors of the Street and Sewer Department, Room 251, City Hall, until 2:00 P.M., Eastern Standard Time, March 13, 1951, at which time and place they will be publicly opened and read aloud.

The work embraces the construction of approximately 9500 linear feet of 72" and 84" diameter reinforced concrete sewer pipe lines, the construction of approximately 9000 linear feet of 8" to 16" diameter cast iron water mains, the construction of a reinforced concrete T-girder bridge across Shellnot Creek and other appurtenant and miscellaneous work.

Drawings and specifications may be obtained from the office of the Board of Directors of the Street and Sewer Department of the City of Wilmington, Room 260, City Hall, or from the Office of Whitman, Requardt and Associates, 1304 St. Paul Street, Baltimore 2, Maryland, upon deposit of Twenty-five Dollars ($25.00) for each set of drawings and specifications, which deposit will be refunded upon return of the plans and specifications in good condition.

The Board of Directors of the Street and Sewer Department reserves the right to reject any or all bids and to accept the bid, which in its opinion best serves the interests of the City.

By order of
Board of Directors of the Street and Sewer Department
Chester R. Jones—President.

Attested
James J. Livingstone, Secretary

(Continued on page 108)

OFFICIAL PROPOSALS
(Continued from page 107)

Bids: February 20, 1951 (326)

Furnishing and Delivering Fire Hydrants

WASHINGTON SUBURBAN SANITARY COMMISSION
CONTRACT NO. 931-W

Sealed proposals for furnishing and delivering sixty (60) 4-foot; sixty-five (65) 4½-foot; seventy-five (75) 5-foot; fifty (50) 5½-foot; twenty-five (25) 6-foot; ten (10) 6½-foot; ten (10) 7-foot; three (3) 7½-foot and two (2) 8-foot fire hydrants will be received in the Office of the Purchasing Agent, Room 3, of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland until 10:30 A.M. Eastern Standard Time on Tuesday, February 20th at which time and place they will be publicly opened and read.

Specifications may be obtained from W. R. Douglas, Purchasing Agent of the Commission, Hyattsville, Maryland.

Dwight B. Galt, Chairman
Warren Browning
Leland G. Worthington
Commissioners.

Bids: March 19, 1951 (323)

Expansion of Fuel Storage Facilities

PHASE II

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CONTRACT NYA-120.001

Sealed proposals for the construction of Phase II of the expansion of the fuel storage facilities at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2:00 P. M. Wednesday, March 14, 1951, and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25. per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman.
New York, February 15, 1951

Bids: February 26, 1951 (301)

Six Sanitary Sewer Projects at Pine Bluff, Arkansas

Sealed proposals will be received by the City of Pine Bluff, Arkansas, at the office of the Mayor in the City Hall until 10:00 o'clock a.m. on the 26th day of February, 1951, and then publicly opened and read for the furnishing of all plant, labor, materials and equipment and performing all work required for the construction of the following six sanitary sewer projects:

Project No. 1: Trunk line sewer, pumping plant and outfall structure. 4.32 miles of sewer lines, 18" to 42" diameter pipe.

Project No 2: Intercepting sewers, pumping plant and force main. 2.65 miles of sewer lines, 8" to 18" diameter pipe.

Project No. 3: Intercepting sewers, pumping plant and force main. 6.91 miles of sewer lines, 8" to 21" diameter pipe.

Project No 4: Intercepting sewers, 2 pumping plants and force main. 7.9 miles of sewer lines, 8" to 21" diameter pipe.

Project No. 5: Intercepting sewers, pumping plant and force main. 12.1 miles of sewer lines, 8" to 21" diameter pipe.

Project No. 6: Alteration of Florida Street pumping station and force main.

All bids shall be submitted on printed forms contained in the book of specifications and contract documents in accordance with the instructions to bidders and will become a part of the proposed contract. Plans and Specifications, the latter containing Instructions to Bidders, Proposal Form, Contract Form, Bond Form, etc., can be examined at the office of the City Clerk at Pine Bluff or the office of A. E. Heagler, Consulting Engineer, 520 National Building, Pine Bluff.

Bidders desiring copies of the Plans and Specifications, with related contract documents, may obtain them from A. E. Heagler, Consulting Engineer, 520 National Building, Pine Bluff, by making a deposit of twenty-five dollars ($25.00) per set with the exception of Project No. 2 which is fifteen dollars ($15.00). The full amount of this deposit will be refunded to each actual bidder (up to a limit of one set on each project to each bidder) upon return of the complete set of Plans and Specifications in good condition within 10 days after the opening of the bids. To non-bidders, one-half of the deposit will be refunded upon return of the complete set of Plans and specifications within 10 days after the opening of bids.

Each proposal must be accompanied by a surety bond or certified check in the amount of at least five (5%) per centum of the bid, made payable to the City of Pine Bluff, Arkansas. The check or bond is required as a guarantee that if the bid is accepted that the bidder will enter into a contract and execute bond.

Bidders may bid on one or all projects or any combination.

The right is reserved to reject any and all bids, and to waive any technicalities or informalities therein.

Contractors submitting bids must be licensed under the terms of Act 124 of the Acts of 1939 Arkansas General Assembly, as amended, and the contractor's license number must appear on the face of the envelope containing his bid.

George H. Steed, Mayor of the
City of Pine Bluff, Arkansas

A. E. Heagler,
Consulting Engineer

Bids: March 1, 1951 (324)

Renovation in the Southwest Quarter of the 11th Floor Port Authority Building

THE PORT OF NEW YORK AUTHORITY
CONTRACT O & M—122

Sealed proposals for the Renovation in the Southwest Quarter of the 11th Floor of the Port Authority Building, 111 8th Ave., New York, N. Y., will be received in the office of the Director of Purchase of The Port of New York Authority, Room 1402, 111 8th Ave., New York, N. Y., until 11:00 A. M., Thursday, March 1, 1951, at which time and place said proposals will be publicly opened and read.

Contract documents may be obtained from the Department of Purchase.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman.
New York, February 15, 1951

Bids: February 28, 1951 (325)

New York International Airport Utilities for Permanent Control Tower

THE PORT OF NEW YORK AUTHORITY
CONTRACT NYA-170.133

Sealed proposals for furnishing and installing utilities and control wiring and constructing a parking area and road for the Permanent Control Tower at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2:00 P. M. Wednesday, February 28, 1951, and thereafter in the Auditorium of the Authority at the same address until 2:45 P. M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman.
New York, February 15, 1951

(Continued on page 109)

Lower Bids Higher Profits

either—or both—are possible for contractors operating modern equipment as featured in the advertising pages of this issue.

MAKE YOUR $$$$ HAVE MORE ¢¢¢¢

The cents saved on every dollar spent may provide enough additional dollars to pay for additional work.

Advertising contracts-to-be-let for construction work, materials or equipment in the OFFICIAL PROPOSALS COLUMNS of ENGINEERING NEWS-RECORD provides intensive local, regional and national coverage of possible bidders and the opportunity to let contracts at minimum costs consistent with good work, THROUGH MORE BIDS.

Official Proposals Division

ENGINEERING NEWS-RECORD
330 W. 42nd St.
NEW YORK 18, N. Y.

U. S. Government
(Continued from page 108)

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS, Foot of Prytania Street, New Orleans, La.—Sealed bids will be received in this office until 11:00 a.m., CST, 21 March 1951, and then publicly opened for construction of spillway, outlet structures, dike and dam closure of Texarkana Dam, Bowie and Cass Counties, Texas, New Orleans District. The principal features involved are approximately 50,000 cubic yards of concrete; 74,000 barrels of cement; 4,290,000 pounds of reinforcing steel; 3,700 lineal feet of drainage relief wells; 70,100 cubic yards of riprap; 3,570,000 cubic yards of excavation; and 2,000,000 cubic yards of compacted embankment. Further information on application. (322)

January 31, 1951 UNITED STATES DEPARTMENT OF THE INTERIOR. BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on Invitation No. 7S3S-165 will be received at P. O. Box 280, Reclamation Center, Casper, Wyoming, until 10 a.m., Mountain Standard Time, February 27, 1951, and then publicly opened for furnishing and delivering Control and Relay Switchboards and Battery Charger for Seminoe Power Plant Additions and Sinclair Substation, Kendrick Project, Wyoming, and Transmission Division, Wyoming, Missouri River Basin Project.

Copies on the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: A. A. Batson, Regional Director, New Customhouse, Denver, Colorado, and I. J. Matthews, District Manager, P. O. Box 280, Casper, Wyoming. No charge to prospective bidders for copies of the specifications; to others $0.25 per copy, not returnable. (321)

Department of Commerce, Bureau of Public Roads, January 26, 1951. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., February 27, 1951, for Project 1C2, Baltimore-Washington Parkway, Prince Georges County, Maryland. Reinforced Concrete Bridge for Good Luck Road. Length 0.069 mile. The approximate quantities of the more important items are as follows: 102,500 cu. yd. Excavation, 2,050 cu. yd. Cement Concrete, 275,000 lb. Reinforcing Steel, 390 cu. yd. Stone Masonry and 4,000 lin. ft. Treated Timber Piling. Minimum wage rates have been fixed as required by law. For plans and specifications, a deposit of $10.00 cash or CERTIFIED check made payable to the Treasurer of the United States, will be required to insure their return within 15 days after the opening of bids. Plans, specifications and proposal forms may be obtained at the address given above. H. J. Spelman, Division Engineer. (304)

BIDS FOR REPLATING STEEL BARGES —Memphis District, Corps of Engineers, U. S. Army, P. O. Box 97, Memphis 1, Tenn. Sealed bids will be received until 11:00 a.m., C.S.T., 27 February 1951, and then publicly opened for replating twenty-three steel material barges. Information upon request. (315)

OFFICIAL PROPOSALS

Bids: March 1, 1951 (297)

Refuse and Sewage Sludge Incinerator, Sewage Treatment Plant, Pumping Station and Sewers

MUNICIPAL AUTHORITY OF THE TOWN OF BLOOMSBURG, COLUMBIA COUNTY, PENNSYLVANIA

Sealed proposals will be received at the Council Chamber, Town Hall, Bloomsburg, Pennsylvania, until 2:00 P.M., EST., March 1, 1951 for furnishing all necessary labor, materials and equipment, and performing all work for the construction of a SEWAGE TREATMENT PLANT, PUMPING STATION AND SEWERS and a REFUSE AND SEWAGE SLUDGE INCINERATOR AND APPURTENANCES, and will there be publicly opened and read at that time. Separate proposals will be received upon two parts of the project as follows:

Refuse and Sewage Sludge Incinerator —including Incinerator Building, Circular (Mechanically Stoked) Furnace or Mutual-Assistance (Manually Stoked) Furnace, Chimney and Foundation, Water Service Line, Electrical Work, Exterior Piping, Concrete Piping, Access Road and Landscaping, Specified Equipment and Appurtenances.

Sewage Treatment Plant, Pumping Station and Sewers—including Control Building, Diversion Manhole, Flash Mixer, Flocculator, two Clarifiers, Chlorine Contact Tank, two Sludge Concentration Tanks, Concrete Piping, Fencing, Electrical Work, Exterior Piping, Access Road and Landscaping, specified equipment and appurtenances; 10,000 lin. ft. 8" to 12" vitrified sewers; 1,000 lin. ft. 6" vitrified sewer house connections, 600 lin. ft. 15" and 24" reinforced concrete pipe; 35 manholes and appurtenances.

Proposals shall be accompanied by certified checks or satisfactory bidder's bonds in accordance with provisions contained in the Specifications and in amount not less than five (5) per cent of the bid total.

Copies of the Contract Documents, including Plans and Specifications, may be seen at the office of Gannett Fleming Corddry and Carpenter, Inc., 600 North Second Street, Harrisburg, Penna., or at the office of the Authority Secretary Paul Jacobs, Town Hall, Bloomsburg, Pennsylvania; or they may be obtained from the first of the above places upon deposit of the following amounts for each set:

Refuse and Sewage Sludge Incinerator $20.00

Sewage Treatment Plant, Pumping Station and Sewers... $25.00

Full refund will be made to actual bidders for return of one set in good condition within ten (10) days after closing date for receipt of bids; refund for return of all other sets, in good condition within the same periods, will be fifty (50) per cent of the deposit.

Gannett Fleming Corddry & Carpenter, Inc., Engrs. 600 N. Second Street Harrisburg, Pennsylvania.

Municipal Authority of the Town of Bloomsburg, Bloomsburg, Pennsylvania.

Bids: February 20, 1951 (299)

Broome Type Sluice Gates, Etc.

CONTRACT 423

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, February 20, 1951, for Contract 423, for furnishing, testing and delivering two 6-foot by 14-foot Broome type sluice gates, eight stop shutter frames weighing approximately 150,000 pounds, eight stop shutters weighing approximately 70,000 pounds, a stop shutter lifter weighing about 1,000 pounds, and appurtenances, for installation in the intake chamber of the East Delaware tunnel, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of thirty thousand dollars ($30,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, JAMES J. MORAN, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: March 19, 1951 (303)

Sewage Treatment Plant

Sealed bids for the construction of the TOWN OF EAST PROVIDENCE SEWAGE TREATMENT PLANT, EAST PROVIDENCE, RHODE ISLAND, will be received by the Chairman of the Board of Sewer Commissioners, at the Town Hall, East Providence, Rhode Island, until 7:00 o'clock P.M. (EST) on March 19, 1951, and then publicly opened and read at its meeting.

The project consists of complete construction for a primary and secondary sewage treatment plant, including chlorine control building and pump sump, stilling basin and grit chambers, comminutors, two primary tanks (primary sludge sump, primary scum sump and valve pit), chlorine mixing chambers, dosing siphon building (six siphons), six trickling filters, chlorine mixing chamber and drop manhole, two secondary tanks (secondary sludge sump), two digesters, filter building (Administration), manholes, all equipment, piping, heating and ventilating, roadways and landscaping.

The Contract Documents, including drawings and specifications, may be examined on and after February 20, 1951, at the office of the engineers, Charles A. Maguire & Associates, 1015 Turks Head Building, Providence, Rhode Island, and copies may be obtained upon deposit of $75.00 for each set taken. Any bidder, upon returning one such set promptly and in good condition, will be refunded his payment. All other deposits of actual bidders and all deposits of non-bidders, upon return of the documents in good condition within fifteen (15) days after the date of opening of bids, will be refunded with a deduction of twenty-five ($25.00) Dollars for each set taken, to cover the actual cost of production.

Bid security, in an amount of not less than five (5%) percent of the total bid in the Proposal, shall be submitted with the bid and shall be subject to the conditions set forth in the Instructions to Bidders. The Engineer's Estimate is one-and-half million ($1,500,000) dollars.

No bid may be withdrawn for a period of thirty (30) days subsequent to the opening of bids.

The Board of Sewer Commissioners of the Town of East Providence, Rhode Island, reserves the right to waive any informalities in, or to reject, any or all bids.

EAST PROVIDENCE BOARD OF SEWER COMMISSIONERS
[s] Milton H. Irons
Chairman

Bids: February 27, 1951 (320)

Sewage Treatment Plant

READVERTISEMENT
CITY OF NORWALK, CONN.
Contract 1
REHABILITATION OF
SEDIMENTATION TANKS

Proposals for rehabilitating two sewage Sedimentation Tanks, opened on January 30, 1951, have been rejected and the project is being readvertised on the basis of elimination of assessment of liquidated damages for delay in completion of Contract.

Sealed bids for rehabilitating two sewage Sedimentation Tanks will be received at office of the City Clerk, City Hall, South Norwalk, Conn., until 8:00 p.m. Eastern Standard Time on February 27, 1951.

Contract 2
ADDITIONS AND ALTERATIONS

The date of opening sealed bids for constructing Sewage Treatment Plant improvement, Contract 2, has been extended until 8:00 p.m. Eastern Standard Time on February 27, 1951. The bids will be received at office of the City Clerk in City Hall, South Norwalk, Conn.

CONTRACTS 1 AND 2 COMBINED

Provision has been incorporated in Contract 1 to permit the submission of a bid for both Contracts 1 and 2 on the basis of the award of both contracts to a single bidder. The bidder has the option of stipulating that his bid on Contract 1 shall be effective only if also awarded Contract 2.

Drawings and documents for both contracts may be examined and obtained at above office and office of Metcalf & Eddy, Engineers, 1300 Statler Bldg., Boston, Mass. Deposit for Contract 1, $10; Contract 2, $25.

Bids security, certified check; Contract 1, $1,500; Contract 2, $35,000.

Successful bidder must furnish 100% performance bond for each contract awarded.

Department of Public Works
Norwalk, Connecticut

(Continued on page 110)

READ THE OFFICIAL PROPOSAL COLUMNS OF ENGINEERING NEWS-RECORD THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS
(Continued from page 109)

Bids: February 26, 1951 (296)

Demolition and Removal of Buildings

THE DELAWARE RIVER JOINT COMMISSION
CAMDEN, N. J.

Sealed bids will be received for Demolition and Removal of Buildings on Sites of New Police Building and Toll Houses, Camden, New Jersey, to be identified as Contract No. 12, at the office of the Secretary of The Delaware River Joint Commission, Administration Building, Bridge Plaza, Camden, New Jersey until 1:30 P.M., Eastern Standard Time, Monday, February 26, 1951 and then and there will be publicly opened and read.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified or cashier's check in the sum of $3,000 payable to The Delaware River Joint Commission and drawn upon a National or State bank or trust company having an office either in Philadelphia, Pennsylvania or Camden, New Jersey and the Surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Commission will afford prospective bidders an opportunity to inspect the work to be done.

The Commission reserves the right to waive any informalities in the bids received; to reject any or all bids; and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Commission to be most advantageous to the public interest.

THE DELAWARE RIVER JOINT COMMISSION
Joseph K. Costello,
Secretary

Bids; March 20, 1951 (302)

Northwest Interceptor Southfield Section

DEPARTMENT OF PUBLIC WORKS
CITY OF DETROIT, MICHIGAN
CONTRACTS PW-1406, 1407, AND 1408

Sealed proposals for Northwest Interceptor—Southfield Section, extending from the southerly end of the existing Southfield sewer in the City of Dearborn to the Rouge River at Bayside Avenue in the City of Detroit, addressed to the Department of Public Works of the City of Detroit, and endorsed "Proposals for Contracts PW-1406, 1407, and 1408" will be received at the office of the Department of Public Works, 104 City Hall, until 2:00 p.m., City of Detroit Time, on Tues., March 20, 1951, at which time they will be publicly opened and read aloud. Any proposal received after the above-mentioned time will be returned to the bidder unopened.

The work included consists of approximately 3.6 miles of 10'-0" diameter sewer under streets and rights-of-way, extending from the southerly end of the existing Southfield sewer in the City of Dearborn to the Rouge River at Bayside Avenue in the City of Detroit. The greater portion of the sewer will be a cylindrical tunnel of concrete or brick construction.

The work is separated into three Contracts, namely, PW-1406, 1407, and 1408. Bidders may bid on any or all of the three Contracts; or may submit a combined bid on any combination of Contracts.

Approximate lineal feet of main sewer in each Contract beginning at the Rouge River is as follows:

PW-1406— 7,092
PW-1407— 5,257
PW-1408— 6,551

Total 18,900 = 3.6 Miles Approximately

The Contract Documents, including Notice to Bidders, Form of Proposal and Agreement, Drawings and Specifications, may be examined and copies may be obtained by making a deposit of $15 per set which sum will be refunded upon the return in good condition of the complete set of Contract Documents within 10 days after receipt of proposals, or if used in submitting a bona fide proposal.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount not less than 5 percent of the total bid price as security for the acceptance of the Contract.

SEARCHLIGHT SECTION

Classified Advertising

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** :EQUIPMENT :USED OR RESALE

UNDISPLAYED RATE

$1.50 a Line, minimum 4 lines. To figure advance payment count 5 average words as a line.
EMPLOYMENT WANTED and Individual Selling Opportunity undisplayed rate is one-half of above rate, payable in advance.
Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.
Replies are forwarded each day as received at each of the offices mentioned without additional charge.

Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.

EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED RATE

The advertising rate $14.25 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.
An advertising inch is measured 7/8 inch vertically on one col., 3 col.—30 inches to a page. E.N.R.

New advertisements received by February 16th will appear in the March 1st issue.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

ENGINEERS WANTED for industrial fire prevention field work by national insurance organization with offices in most major cities. These are permanent jobs with a real future, but candidates should appreciate that extensive away-from-home travel is involved. Age 26-40 preferred. P-8306, Engineering News-Record.

CIVIL ENGINEERING Technicians: (Laboratory and Field experienced in soils, concrete, asphalt. Structural Engineers, foundation design. Drillers: soil borings-diamond drilling. Projects located in the East, Midwest, South. Furnish complete information including age, education, experience and salary. Toledo Testing Laboratory, Toledo, Ohio.

WANTED: STRUCTURAL Engineers, Mechanical Engineers and Industrial Architects; some defense work. Seelye, Stevenson & Value, 101 Park Avenue, New York, N. Y.

STRUCTURAL DESIGNERS and Draftsmen wanted by Baltimore consultant for indeterminate reinforced concrete and steel structures. Good salaries, paid overtime and vacations. State Education, detailed experience, tentative reporting date and salary requirements in first letter. P-8815, Engineering News-Record.

ENGINEER, EXPERIENCED as draftsman in detailing industrial piping and in field supervision in connection with mechanical installation work for sewage treatment plant. Write P. O. Box 1074, Roanoke, Va.

POSITION OPEN for engineer or construction man familiar with dock building and pile driving, who lives in the Newark-Elizabeth, N. J. district. Write P-8847, Engineering-News-Record.

ENGINEERS WANTED, experienced in the design of sewage treatment plants, water works, surveying, preparation of plans and specifications. State experience, give references, salary requirements and military status. Reply P-8919, Engineering News-Record.

CIVIL ENGINEERS Wanted—Senior Civil and Assistant Civil Engineers wanted with experience in Municipal and Public Works Engineering—Civil Service—apply or send record of education and experience to City Clerk, City Hall, Royal Oak, Michigan.

PROJECT MANAGER and General Superintendent. 10 to 15 years experience heavy construction. P-8935, Engineering News-Record.

(Continued on page 112)

1—Sr. Electrical Engineer
5 yrs. experience in communications systems (telephone, teletype, radio, remote controls, etc.).

1—Sr. Electrical Engineer
5 yrs. experience power distribution and interior electrical wiring.

3—Jr. Electrical Engineers — Recent Graduates Recognized Engineering Schools
Outstanding opportunity for young engineer.

5—Electrical Draftsmen
Minimum of 2 yrs. experience electrical detailing.

PALMER & BAKER, INC.
P. O. Box 346 Mobile, Alabama

SANITARY ENGINEERS

For Maryland State Merit System Positions. Must have degree in Sanitary Engineering and six years' experience in sanitary engineering, two of which have been in a supervisory capacity. (Graduate work may be substituted for part of experience requirement.) All advantages of Merit System Employment offered. Salary $6000. Contact the

State Employment Commissioner's Office
31 Light Street, Baltimore 2, Maryland
for complete information.

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Work will consist of stress analysis primarily of laminated wood structures. Man required should have imaginative mind, coupled with thorough grounding in mechanics of materials. Work will be interesting, has excellent future, and is permanent.
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P-8924, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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P-8339, Engineering News-Record
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P-8870, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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SW-8869, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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MECHANICAL ENGINEER

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P-8758, Engineering News-Record
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(Continued from page 110)

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CIVIL ENGINEER, registered, 13 years experience in photogrammetry, topography, traverse, triangulation, property surveys, construction layout. Prefer small town location or within commuting distance. PW-8823, Engineering News-Record.

REGISTERED C.E. 20 years experience in design and construction of roads, bridges, streets, sewers, airports, etc. Desires permanent position. PW-8734, Engineering News-Record.

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GENERAL SUPERINTENDENT, 28 years experience on Sewers, Dams, Tunnels, Water, Dirt Moving, Bridges, Concrete. PW-8809, Engineering News-Record.

ENGINEER WITH broad field and office experience wants a position with a company planning mill extension, to assist the company organization in construction, mechanical and development lines. PW-8891, Engineering News-Record.

CIVIL ENGINEER Graduate age 30, 5½ years experience 2 years in field, 3½ years in office. Experienced in field supervision, design, drafting, estimating, quantity take-off; reinforced concrete. Desire responsible position in field or office. Prefer New York area. Limited travel. PW-8899, Engineering News-Record.

MECHANICAL JOB Engineer, 11 years experience covering every phase from incentive to completion of oil refineries and chemical plants, including equipment selection, specification, sizing, and design; piping sizing and layout; heat and material balances; desires permanent position. Will relocate. Address PW-8911, Engineering News-Record.

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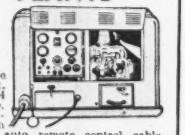

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Brownhoist 1-yd. gas shovel and crane.
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Lorain 40 Hi-Lift shovel attachment.
Bucyrus-Erie 30B tunnel front attachment.
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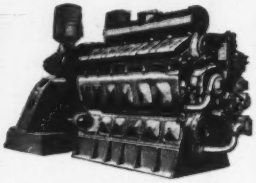

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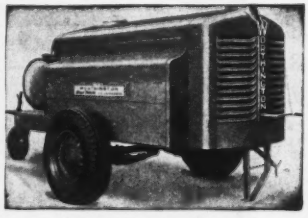

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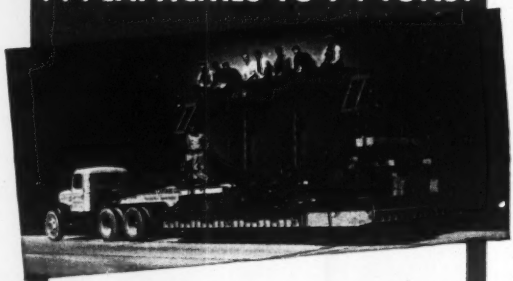

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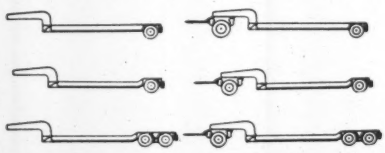

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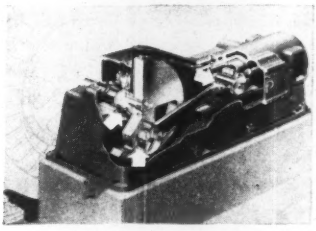
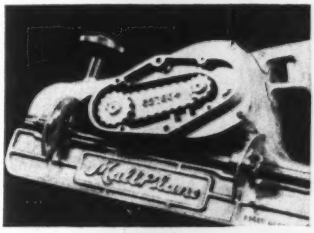
GALION Model 118 motor grader features an improved transmission of the constant-mesh type. It has six overlapping forward speeds ranging from 1.3 to 22.6 mph and two reverse speeds, including a high range of 10.5 mph. Only one lever is needed for shifting all gears, forward or reverse. Other features include: 100-hp diesel engine, positive all-gear 4-wheel tandem drive; full hydraulic control; and high-arched frame for maximum adjustment of blade. Included as standard equipment are hand steering with hydraulic booster and large front tires same size as rear tires. Available as extra equipment is a hydraulic shiftable moldboard that permits a maximum extension of the blade 103 in. beyond rear tires with a 13-ft moldboard. Weight is from 23,560 lb up depending upon extra equipment.—GALION IRON WORKS & MFG. CO., GALION, OHIO.



Ball-bearing compressor

Class O-CE horizontal duplex motor-driven compressors feature antifriction roller bearings throughout. Spherical roller main bearings support the crankshaft and are also used at the crank pin end of the connecting rod; double row needle bearings are used in the crankhead end of the rod. Features claimed include: Self-adjusting; long-life; smooth operation; full-flood lubrication; one-piece crank disks and connecting rods; and easy maintenance.—CHICAGO PNEUMATIC TOOL CO., 6 E. 44TH ST., N. Y. 17, N. Y.



Gear-toothed belt

Rubber-and-fabric belt with teeth will not slip and permits split-second precision timing, the manufacturer reports. Another feature claimed is quiet operation. The Gilmer belt can be used at speeds to 16,000 fpm. It can be manufactured in any desired size and in a variety of materials to suit specific applications. The company reports the belt will not stretch and will operate on fixed centers without take-up adjustments.—UNITED STATES RUBBER CO., 1230 6TH AVENUE, NEW YORK 20, N. Y.

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Cementex boards are produced from shredded wood and a cement binder. The boards are said to be durable, inexpensive, and fire-resistant; to have good insulation and soundproof properties; and to not rot, expand, or contract. They can be nailed, plastered, stuccoed, painted, or sawed. Paper (12-lb) is incorporated into the board to provide a vapor barrier. Cementex is available in two types—standard, and with a paper backing and pressed edges for stucco.—CEMENTEX LTD., 2060 W. 10TH AVE., VANCOUVER, B. C.

Electromagnetic drill

Model 10-RO electromagnetic hammer drill is designed for high-speed hole drilling in concrete, brick, and stone. Automatic rotation of the carbide-tipped spiral-drill speeds up hole drilling, eliminates manual turning of the drill chuck, and reduces fatigue. Speed of the hammer is 3,600 blows per min. Weight is 11¾ lb.—SYNTRON CO., 328 LEXINGTON AVE., HOMER CITY, PA.

Heavy-duty cable hoists

Bob-Cat electric hoists are available in ½, 1, 1½, 2, 3, and 5-ton capacities. They feature total enclosure of the motor within the cable drum, reducing over-all dimensions and weight, and providing protection against moisture and dirt. Safety factor is 6:1, or better. Load hook oscillates on ball bearings and swivels on roller bearings.—THE CLEVELAND CHAIN & MFG. CO., BROADWAY & HENRY STS., CLEVELAND 5, OHIO.

Clutch coupling

Centrifugal clutch coupling for heavy equipment permits vertical lift from the mounting of either driver or driven equipment. In operation, the driving spider slides back over the driving hub far enough to clear the driven half of the coupling, permitting either member to be lifted clear of the other. Couplings are available for Rawson standard shoes or spring-controlled

(*Continued on page 123*)

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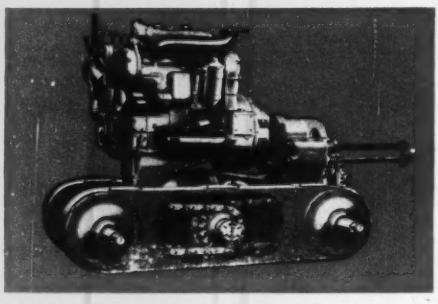

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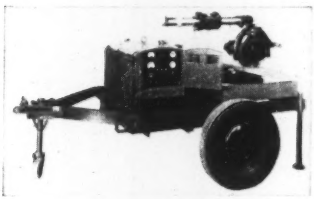
shoes. They come in nine sizes ranging from 6x2 to 24x8 in.—CENTRIC CLUTCH CO., 22-26 SOUTH AVE., W., CRANFORD, N. J.

Portable air compressor

Two-stage 30-ft air-cooled compressor has a maximum operating pressure of 150 lb. It is equipped with air receiver, oil-bath air cleaners, and protective V-belt guard. It is available in a trailer model having an over-all length of 74⅝ in.; or a hand truck model with an over-all length of 65 in.—WORTHINGTON PUMP & MACHINERY CORP., HARRISON, N. J.

Liquid neoprene coating

Gaco neoprene can be used as a coating for steel, wood, and concrete. According to the manufacturer, the neoprene is easily applied without special equipment or elaborate surface preparations. One coat will cover in most cases.—GATES ENGINEERING CO., P. O. BOX 1711, WILMINGTON, DELA.



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Radial power saw generator combination is trailer mounted for high portability. The saw is a 3-hp 3-phase 240-v Comet Clipper that cuts stock 16-in. wide up to 4½-in. thick. A 4-cyl gasoline engine drives the generator that delivers 5 kw of power. This provides power for the saw and 6 single-phase 120-v power outlets.—CONSOLIDATED MACHINERY & SUPPLY CO., 2031 SANTA FE AVE., LOS ANGELES 21, CALIF.

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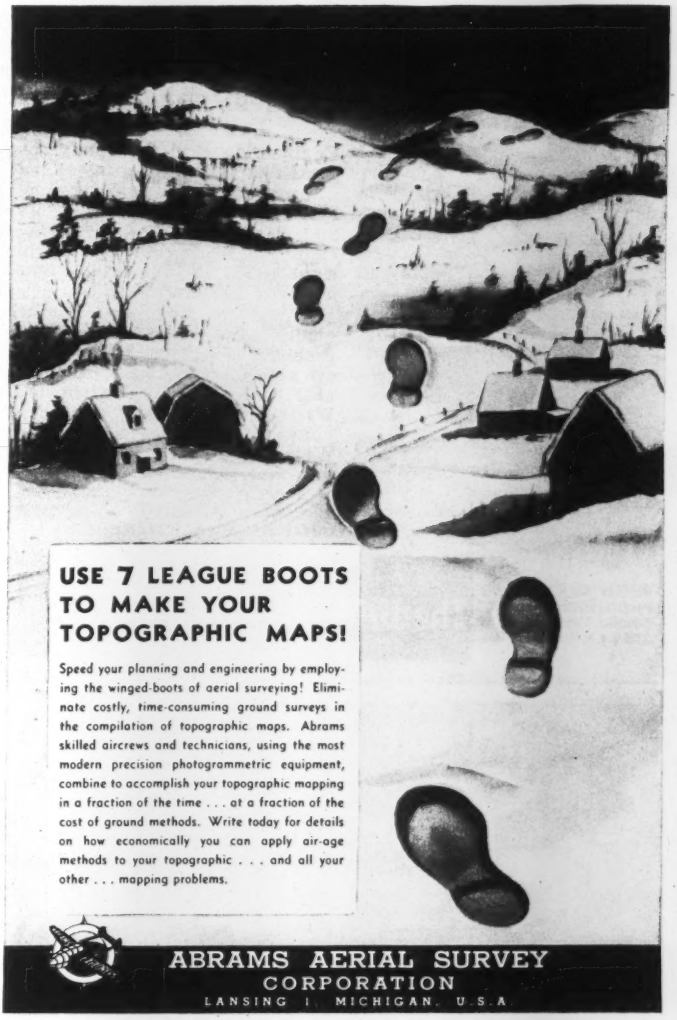
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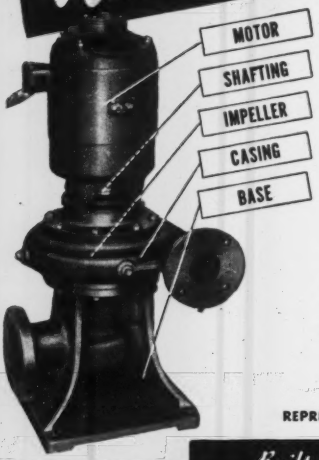

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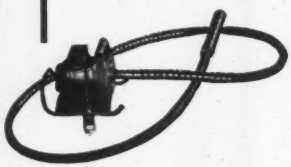
Concrete Vibrators are better because:



STOW Vibrators are ruggedly constructed for long, efficient service, deliver up to 7000 vibrations per minute to the mix . . . place even stiff mixes uniformly. The high-speed motors (up to 9500 RPM) are protected by skid mountings. Job-engineered, smooth running STOW FLEXIBLE SHAFTS guarantee longer, trouble-free performance. For better results, always specify STOW Vibrators!

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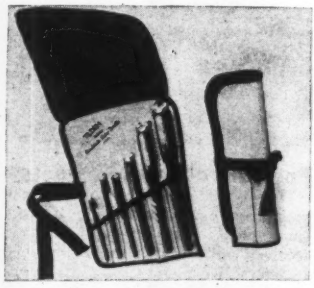
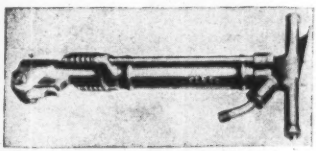
HCVS features a visible gas flow. To the basic HVCS chlorinizer may be added step control, automatic proportioning, and semi-automatic or programmed control without modification of the basic manual unit. Full feeding range is available with no change in functional parts.—BUILDERS-PROVIDENCE, INC., 345 HARRIS AVE., PROVIDENCE, R. I.



Concrete-drill-bit kit

Rotary Konkrete Kore drill kit consists of six bits—three of the centerless type ($\frac{3}{16}$, $\frac{1}{4}$, and $\frac{3}{8}$-in. sizes); and three of the Kore type ($\frac{1}{4}$, $\frac{5}{8}$, and $\frac{3}{4}$-in. sizes). The bits are packaged in a roll-around plastic case.—TILDEN TOOL CO., 1995 N. FAIR OAKS, PASADENA, CALIF.



Lightweight breaker

RC-50 paving breaker (50 lb) is light enough to be handled by one man in horizontal or overhead work. It is especially recommended for brick work, asphalt-cutting, and shop maintenance. The valve provides full control on power and return strokes, said to assure hard, uniform blows, fast action, minimum recoil, no short stroking, and low air consumption.—REED ROLLER BIT CO., CLECO DIV., 5125 CLINTON DRIVE, HOUSTON 20, TEX.

Chrome-clad steel tape

Leader tape is now available in a maroon-colored Vinylite-covered case that resists water and will not stain or scuff. The Chrome-Clad line is corrosion resistant and is said to not chip, crack or peel. Black markings contrast sharply for easier reading. The tape has a roller-type throat and flat stainless-steel edge band flush inset. The Leader is available in 25, 50, 75, and

(*Continued on page 127*)

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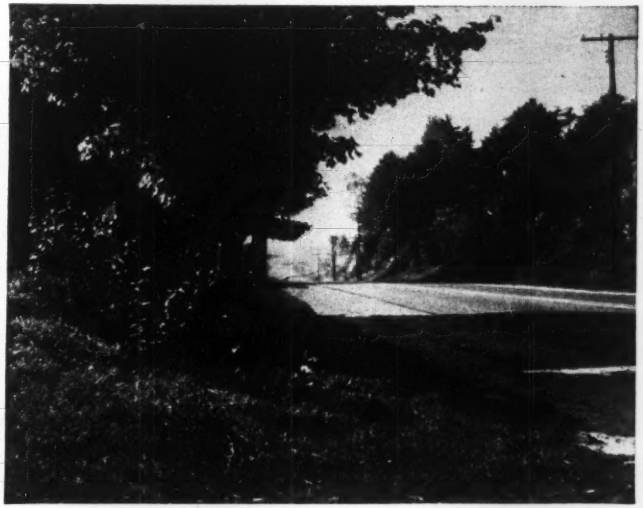

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4. TARVIA road tar is unaffected by gasoline, kerosene, or moisture. It retains its original properties.

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6. TARVIA road tar may be applied at moderate temperatures, and with ordinary equipment.

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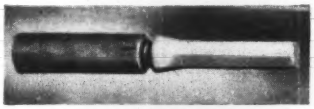
100-ft lengths, with standard or hook ring.—THE LUFKIN RULE CO., SAGINAW, MICH.



Rock bit hole saver

This tool is used to reclaim lost bits and drill steel broken off in the hole so as to save redrilling the hole. Attached to a threaded steel in place of a bit, its left-hand tapered threads cut in the metal of the broken rod and remove it quickly, easily, and without jamming, the manufacturer states. The tool is threaded for Timken H or D; Rock Bit R-1 or R-2 steel to fit the following size steels—$\frac{7}{8}$-in. hex., $\frac{7}{8}$-in. O. O.; 1-in. hex, 1-in. O. O., $1\frac{1}{4}$-in. rd; $1\frac{1}{4}$-in. rd, and $1\frac{1}{8}$ rd.—ROCK BIT SALES & SERVICE CO., 2514 E. CUMBERLAND ST., PHILADELPHIA 25, PA.

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Ledeen valves for actuating air or hydraulic cylinders are made in three types—for hand, foot, and finger or solenoid operation. Embodying rotating-disk construction, they are available in 14 models for 5 cycles in 6 sizes, and can be used for controlling flow of air, oil, or water.—LEDEEN MFG. CO., 1602 S. SAN PEDRO ST., LOS ANGELES 15, CALIF.

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Speedyjet Model 100 cleaner is designed for use where ample high-pressure steam is available. The Speedyjet includes a high-pressure de-

(Continued on next page)

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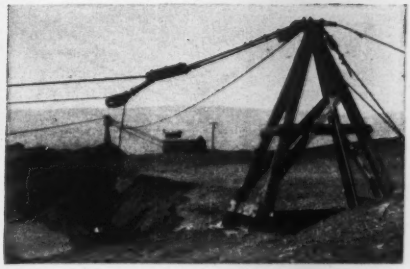

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STORY BEHIND THE PICTURE

A 50-year accumulation of waste coal silt at a Pennsylvania mine is being reclaimed by a 3 cu. yd. Sauerman Power Scraper to a processing plant where the waste is converted into usable fuel. The above photo shows the scraper making its first cut into the pile, which is 1500' long', 700' wide and 50' high.

★

Write for the Sauerman Catalogs A and E and read the facts about handling materials with power scrapers.

SAUERMAN BROS., Inc.

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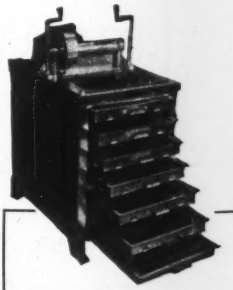

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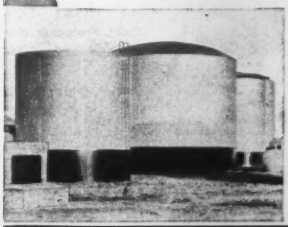

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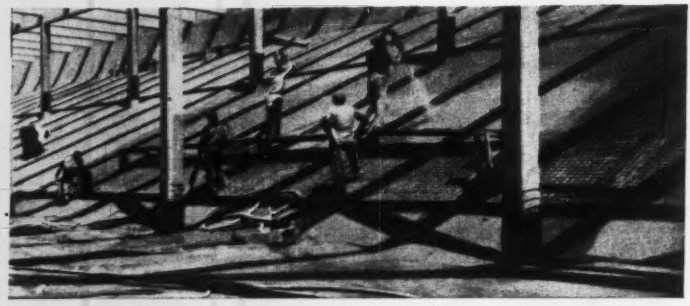

"GUNITE" LINING RESTORES RESERVOIR

When the old, open Ballou Park Reservoir at Danville, Va., was improved and covered in 1948, excessive leakage of the old brick lining was stopped with reinforced "GUNITE." The photo shows details of the process. After concrete columns to support the roof were placed, wire mesh reinforcing was laid and the entire reservoir was "GUNITED." Note that the reinforcing and "GUNITE" were carried over the column footings and up the columns approximately three feet to prevent leaking at those points.

The use of "GUNITE" for repair and construction of reservoirs, bridges, buildings, etc., is illustrated and described in Bulletin A2400. We shall gladly send a copy at your request. On your letterhead, please.

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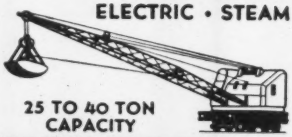

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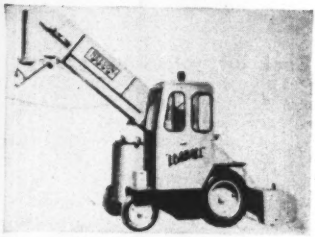
tergent tank mounted on a lightweight dolly with rubber-tired 10-in. wheels. It is equipped with pressure gage, safety valve, and all necessary control valves.—LIVINGSTONE ENGINEERING CO., 100 GROVE ST., WORCESTER 5, MASS.



All-purpose loader

Self-powered Loadall will handle sand, snow, gravel, salt, and other materials without belt changes or special attachments. It travels at 10 mph; working speed is 6½ mph. The Loadall loads heavy materials at 1¾ to 2¼ ypm; snow at 6 to 8 ypm. Powered by a 4-cyl gasoline engine, the Loadall features 24-in. spirals with replaceable, toothed, digging edges.—N. P. NELSON IRON WORKS, INC., CLIFTON, N. J.

New Product Briefs

Compact water-cooling tower for air-conditioning systems is built in three types: Horizontal, vertical, or cylindrical-vertical flow. Production has been standardized to reduce unit costs and improve quality. Manufactured by: Santa Fe Tank & Tower Co., 5401 S. Boyle Ave., Los Angeles 11, Calif.

Prefabricated ranch house features low-pitched roof, wide, overhanging eaves, sweeping horizontal lines and large picture windows. Made by: Gunnison Homes, Inc., Subs. United States Steel Co., New York, N. Y.

Aluminum solder flux can be reactivated after drying out by addition of tap water. The flux (All-State Welding Alloys Co., Inc., White Plains, N. Y.) can be used with aluminum solder rods of any commercially available brand.

Horizontal gas-fired furnace is shipped completely assembled, with all controls and accessories fully mounted and wired, including thermostat and thermostat wires. It is available in models rated at 60, 80, and 100,000-btu input. Made by: United States Radiator Corp., Detroit 26, Mich.

MANUFACTURERS' PUBLICATIONS

Form data—Spacing data for form lumber and form ties are listed in this bulletin. Reprinted from the standard catalog, this chart is suitable for mounting on a wall. Miscellaneous data on form design and concrete pressures are included. Safe spacing of studs, wales, and form ties are listed for 50 and 70-deg temperatures.—Superior Concrete Accessories, 4110 Wrightwood Ave., Chicago 39, Ill.

Maintenance checking chart—Products for successful maintenance of buildings are listed in a complete chart. This chart lists over 100 products and processes for maintenance of floors, roofs, interior and exterior walls, waterproofing, special paints, and other data.—United Laboratories, Inc., 16801 Euclid Ave., Cleveland 12, Ohio.

Valves and fittings—Catalog 50V describes an entire line of bronze and iron-body valves. It is planned for quick, easy reference. The listings are complete and include photographs, dimensional diagrams, price, weight, sizes, and dimensions. A listing of accessories and several pages of essential engineering data complete this 112-p catalog.—Stockham Valves & Fittings, Box 2592, Birmingham 2, Ala.

Lightweight pipe—Bulletin shows typical applications of Lockseam Spiralweld pipe. It includes data on fittings, flanges, connections, and pipe specifications from 4 to 40 in. in dia.—Naylor Pipe Co., 1230 E. 92nd St., Chicago 19, Ill.

Ball bearings—20th edition of New Departure's ball-bearing catalog contains several new features. Selection of bearing type and size is simplified by numerous examples. Load rating tables give both radial and thrust capacities. Speeds have been arranged to include those for synchronous motors. Several more types of single and double-row angular contact bearings have been added.—New Departure Div., General Motors Corp., Bristol Conn.

Non-destructive metal testing—Bulletin 500 fully describes a dye-penetrant method of metal inspection. It explains how this chemical process simplifies testing of metal parts; explains how to run a test; and lists several applications of the process.—Northrop Aircraft, Inc., Dy-Chek Co. Division, 1515 E. Broadway, Hawthorne, Calif.

Acoustical tile—Design data sheet describes textured and perforated acoustical tile. This 8-pager includes data on application methods by adhesives, mechanical suspension, or clipping on wood furring strips. Complete specifications and product description are included. — Owens-Corning Fiberglas Corp., Toledo, Ohio.

Aluminum data book—Factual information on aluminum alloys and mill products is contained in this 194-p data book. Data listed cover alloys, tempers, sizes, shapes, physical properties, chemical properties, mechanical properties, and fabricating characteristics. The manual contains 117 tables, 33 pages of explanatory text, 61 illustrations, and a condensed table of contents on the title page to indicate where to look for detailed information on specific subjects. — Reynolds Metals Co., 2500 S. 3rd St., Louisville, Ky.

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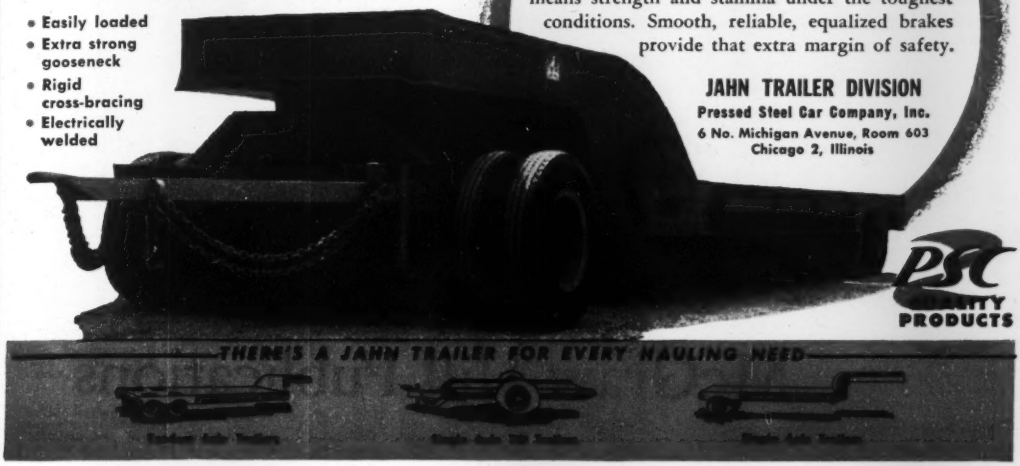

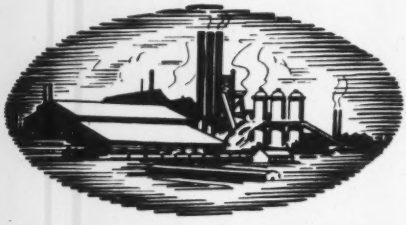

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Housing is his meat

There's a man in Puerto Rico who really knows the meaning of the island's name—rich port. He is the fabulous Leonard D. Long, who struck it rich in homebuilding in the Charleston, S. C., area during the war and has hit it even richer in postwar Puerto Rico.

Long is the only individual builder ever to receive an FHA loan exceeding $28,000,000 in a single commitment. He claims no one else has ever come within $10,000,000 of doing that. Physically, and financially he's a big man; he's doing big things. And he likes to talk about them.

Last February he finished construction on Puerto Nuevo—4,828 units selling from $3,995 up. Now, he's in the duplex and multi-story building construction business. Of the larger buildings he has four; the San Juan Darlington, a 312-apartment, reinforced concrete structure 12 stories high was started on September 7 last. And the other three, each with 122 units are the Ponce Darlington, the Mayaguez Darlington and the Rio Piedras Darlington.

• **Personal touch**—They are all Long's—even the names. Darlington is his mother's family name, and his desire to perpetuate it extends not only to the four above mentionel Puerto Rican cities but also to Atlanta, Ga., and Charleston, S. C.

On Puerto Rico, Long's holdings are administered by no less than 24 corporations with the island's former governor Jesus T. Piñero as their president. Qualifying shares of stock are owned by officers of these firms, but actually it's all Long's.

The construction operations are all his too: He is a builder not a contractor, who claims he has never worked for anyone (except as a carpenter when he started out), has been his own boss since he was 18 years old. On the island, he originates, finances, plans, designs, builds and sells or rents. The only contract let in his operation is that for pile driving. But the piles are his; he has his own plant for casting them in concrete. For the Mayaguez Darlington job, where instead of finding the usual shallow bedrock a deep layer of unstable material had to be penetrated, Long shipped in his own load of 83-ft timber pile from Tacoma, Wash.

• **No windows**—Puerto Rican houses don't have glass windows (as a rule); Long installs aluminum jalousies that are stamped in his own plant at Paris, Ill. He now is building his own door factory on the island to make wooden doors for duplex houses under construction—2,125 of these, 4,250 units. He is now going to build his own floor tile factory.

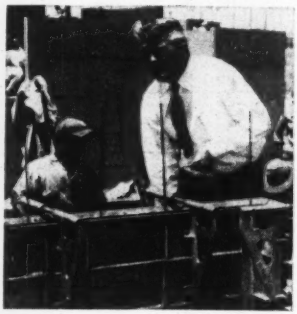
Long Construction Co. has some $1,500,000 worth of equipment in Puerto Rico—a 27 E paver, a 34 E, 16 4½-yd. transit mix trucks and all other equipment needed in building houses, streets, and sewers—except for pile driving rigs.

• **Peak employment**—In about April, Long's construction force is going to hit its all-time peak at about 10,000 men. Back when Puerto Nuevo was at its height of construction, there were 7,200 men on the payroll. Long's labor is paid better than the minimum in every category: Where the rate for common labor is 37¢ an hour, he pays 40¢. Instead of $1.10 an hour, his equipment operators make from $1.25 to $1.50.

There are about 30 engineers on the company's payroll. Just a very few of the top positions are filled by continentals; the rest of this force is made up of Puerto Ricans. Contributions of the firm to advancement of construction techniques on the island have mostly been made through introduction of up-to-date construction equipment where it was not used.

One innovation Long did introduce: he controls patents for an aluminum form with which he built the walls of all his single-story concrete houses. This form pins together; an 18-in. lift of concrete is placed and tamped in it; then pins are pulled, the forms unlock and they are removed immediately and placed for the next 18-in. lift. In effect, the process is one of making concrete blocks in place.

There's no doubt but that Long is building houses on the island as no one ever built them before. (Whether this is good or bad is a moot question; already there is much criticism voiced of the weathertightness of the buildings now housing some 40,000 people in Puerto Nuevo.) On the strength of the argument that his home building operation is new to the island, Long is fighting now for tax exemption, offered by the insular government to new industries in an effort to encourage investment and foster industrialization of Puerto Rico (See p. 32 of this issue). Outcome is uncertain. There has been a change in government since the time when Long was led to believe that he qualified for the tax holiday provision.



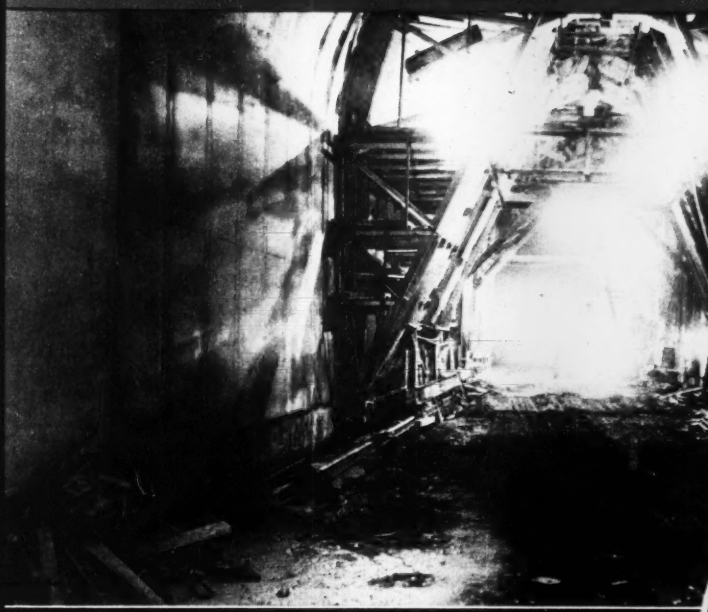
THE MAN and his forms: L. D. Long, South Carolina homebuilder, plies his trade in Puerto Rico.

Long is a strong man with strong convictions. His strength, his attitude and his methods have earned him on the island both respect and dislike. He spends about 50 percent of his time there and says that if he had put in the same amount of effort in the States he'd have had a greater return on his investments—but feels that he's doing more good by filling the Puerto Rican housing needs than he could by building anywhere else.

Long is somewhat of an idealist, believes that he is fighting Communism by building houses. He says, "Give a man a deed and he'll forget Communistic ideas," and points out that he's in the business to sell houses—not to rent them. The man is firmly convinced that the only way to fight Communism is through housing, he believes that given a piece of property to call his own a man assumes an entirely new responsible outlook. He claims he has sold houses for as little as $100 down and has never lost a dime.

Other convictions, equally strong: No house should ever be financed over more than 20 years; public housing is bad; L. D. Long is terrific.

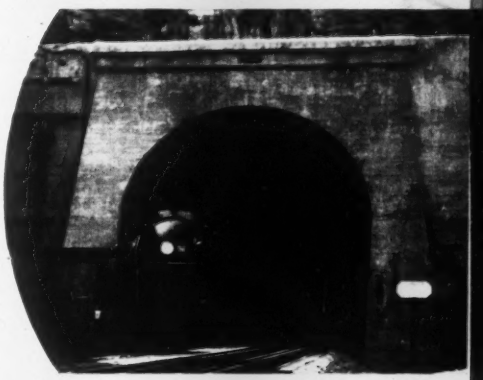
Better Concrete with POZZOLITH



West End of Norfolk & Western's Elkhorn Tunnel, Near Coaldale, W. Va. Started Under Direction Of W. P. Wiltsee, Chief Engineer, Who Subsequently Retired And Was Succeeded As Chief Engineer By A. B. Stone. Assistant Engineer—B. E. Crumpler; Resident Engineers—C. W. Fiery and Roscoe Porter. General Contractor—Sturm & Dillard Construction Co., Columbus, Ohio; Sub Contractor—Haley, Chisholm & Morris, Charlottesville, Va.

ABOVE—View Of Interior Of New Elkhorn Tunnel Looking East From West End, Before The Westbound Track Was Laid.

BELOW—View Of East Portal Of Tunnel.



In the construction of this large Norfolk and Western Tunnel the most advanced engineering methods were employed . . . including the use of Pozzolith, cement dispersing, water reducing admixture.

Concrete was pumped into place, Pozzolith giving the mix the proper workability and cohesiveness for easy pumping without segregation. Pozzolith also minimized shrinkage and assured low permeability.

By conforming with the water-cement ratio law, Pozzolith provides the additional benefits of *increased* strength and great durability.

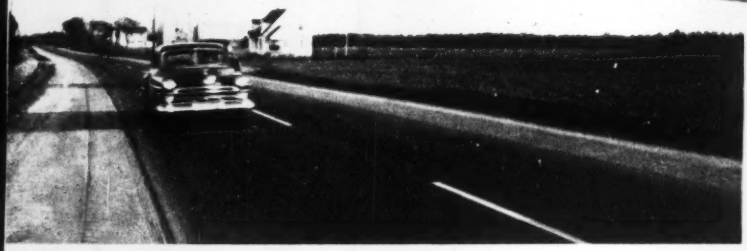
Whatever your concrete requirements, Pozzolith will produce them at lower cost than by any other means.

Full information on request.

The MASTER BUILDERS Co.

CLEVELAND 3, OHIO — TORONTO, ONTARIO

Rehabilitated Highways... Another 38 miles reclaimed by Delaware with Texaco



Laying Texaco Asphaltic Concrete over old pavement on Route 300. General contractor, James Julian of Wilmington. Asphalt mix furnished by General Crushed Stone Company of Easton, Pa.

(upper photo) U. S. 13, principal north-south highway in Delaware, after being resurfaced with Texaco Asphaltic Concrete by George and Lynch of Wilmington, Del.

(lower photo) A 12-mile section of Route 24, on which Texaco Asphaltic Concrete was laid by the Standard Bitulithic Company of Newark, N. J.

Since the end of the World War II, Delaware has made notable progress in restoring wornout portions of its state highway system. The 38 miles resurfaced with hot-mix, hot-laid Texaco Asphaltic Concrete during 1950 was part of this intensive program.

Briefly, the old, worn highways received a light tack coat of Texaco RC-1 Cutback Asphalt. The new asphaltic concrete pavement was then constructed in two courses, a 1¾-inch binder course and 1¼-inch top. Curves were superelevated by the use of an additional 3½-inch asphaltic concrete wedge course.

Whether laid over old, worn paving as in Delaware, or on a new foundation, Texaco Asphaltic Concrete delivers many years of low-cost service under heaviest traffic. Resilient and flexible, it absorbs impact and maintains contact with the foundation. Absence of joints insures driving comfort that lasts. Chemicals used for ice control in winter have no harmful effect, nor do the high temperatures of mid-summer.

Write our nearest office for two helpful booklets on Asphaltic Concrete and other types of asphalt construction.

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